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BIBLIOGRAPHIC INDEX  
OF  
NORTH AMERICAN ARCHAEOCYATHIDS

MATTHEW H. NITECKI

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NORTH AMERICAN ARCHAEOCYATHIDS

MATTHEW H. NITECKI  
*Assistant Curator, Fossil Invertebrates*

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## ABSTRACT

This bibliographic index includes systematic and stratigraphic entries on the species of North American archaeocyathids. Each entry consists of name, reference, stratigraphic and geographic location, and number and depository of cited specimens.

Seventy-five species are recognized and distributed in twenty-six genera.

Short sections on the definition, history, affinities and classification of archaeocyathids are included.





## INTRODUCTION

### *Preface*

During the last two decades, the study of archaeocyathids, particularly in the Soviet Union, has expanded so rapidly that the literature is becoming alarmingly voluminous. The number of taxonomic groups erected is formidable. Almost 200 genera have now been named.

In North America, specimens are usually calcified in contrast to those from the Australian and Siberian platforms, where most are silicified. Because of this difference in their preservation, the phylum has been less extensively studied in America, and fewer specialists on the group have emerged. But even here 75 species are recognized.

Hoping to avoid future chaos, and in order to save later workers the time spent on library search, this bibliographic index of North American archaeocyathids has been compiled as an outgrowth of my interest in Paleozoic sponges. The first workers on the archaeocyathids included them in the Porifera; even the *Treatise on Invertebrate Paleontology* (Moore, ed., 1955) included the two phyla in a single volume. The early references on archaeocyathids inevitably came to hand during my search of the 19th century literature of sponges. Archaeocyathids possess a certain fascination, probably due to their strange and disputed position in the animal kingdom. They were among the first organisms to extract calcium carbonate from the sea, and thus are important in evolutionary history. Their unique structure and their unusually brief history provide the grounds for paleontological speculations.

I have included references to species only, since discussions of genera, as is customary in the paleontological literature, do not occur apart from descriptions of species.

The literature covered is predominantly American and Canadian. Non-American references to American species are uncommon. Many, but not all, stratigraphic entries are included. However, a special effort was made to insure the completeness of systematic papers.

*Definition of archaeocyathids*

Archaeocyathids are small marine benthonic organisms. In North America they are found only in the Lower Cambrian rocks, but range elsewhere into early Middle Cambrian time. They lasted about 50 million years, an extremely short time span for a taxon that was both abundant and widespread. They have been found on all continents except South America. They are extremely common in Australia and Siberia, and have been found in Antarctica.

The major North American localities are shown on the accompanying map (fig. 1). Their distribution follows well the distribution of Lower Cambrian carbonate rocks. Some forms have been described from younger Cambrian strata, but either these are now considered not to be archaeocyathids, or the stratigraphic correlation has been in error.

These organisms are of great stratigraphic value and have stimulated many important biologic discussions. They are great reef builders, associated with carbonate shelf facies, and it appears that they built their skeletal parts only of calcium carbonate. A great deal of speculative work has been done on their spatial and temporal distribution, on their ecology, anatomy, embryology, ontogeny, evolution and paleoecology. These topics are well summarized in English by Hill (1964c, 1965a).

Archaeocyathid skeletons are conical or cylindrical, with no skeletal elements in the interior. Most of the known species have a double wall with an "*intervallum*" between, although single-walled specimens are often found. The walls are perforated, and in some forms complicated skeletons have evolved. It appears that water circulation may have been somewhat similar to that of sponges. By analogy it is assumed that the path was through pores of the outer wall, the *intervallum* and the pores of the inner wall to the interior of the animal. There has been a great deal of speculation on the nature of the soft parts, a matter outside the scope of this paper.

Among the innovators in the construction of a carbonate skeleton, these creatures compose the earliest group known to have become extinct.

*Major works on archaeocyathids*

As in many fossil groups, most of the research on this phylum has been done by a small number of paleontologists. The major works on archaeocyathids fall naturally into five groups representing the

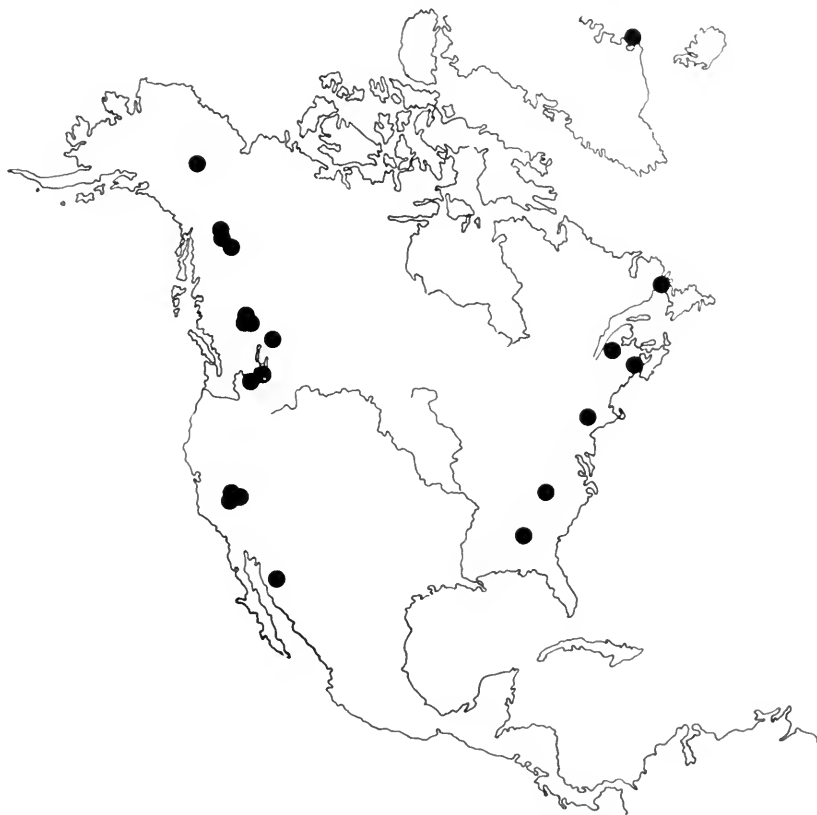


FIG. 1. Map of North America showing the major localities of Archaeocyathids.

five geographic regions of their major occurrence. These are: Russia, Australia, Antarctica, North America, and Europe-Africa.

The Russian literature dealing with the fossils of the Siberian platform, is preponderantly the work of Vologdin and Zhuravleva. The Russian work is difficult for me to evaluate because of the unavailability of the earlier papers and because of the characteristically short descriptions of taxonomic units. One cannot but think that too many species have been described, but this is true in many fields. Foreign collections are unavailable for study, and new species are generally erected for specimens found on different continents. Russian workers have published a great number of good speculative papers, interpreting archaeocyathid evolution, morphology and ecology.

The Australian studies stem from Taylor's (1910) excellent early account which contains clear illustrations and an imaginative scheme of classification. A series of papers (R. Bedford and W. R. Bedford, 1934, 1936, and R. Bedford and J. Bedford, 1936, 1937, 1939) was published on the taxonomy of Australian forms. They described many new taxa and proposed an outline of classification.

The fossils in Antarctica were first recovered from glacial moraines, and from sea dredging. These were monographed by Gordon (1920). It is only recently that specimens have been collected *in situ*. All the Antarctic material was worked out by Hill (1964a, b; 1965a), who contributed the most important recent papers (in English) on all aspects of archaeocyathids. Hill is now a leading student of the group who has "dallied" with them with the most "vigorous precision of scientific method" (Hill, 1965b, pp. 74, 75). Her highly imaginative and careful work reads in a way pleasantly different from the remaining sea of short descriptive notes of other authors.

The fourth group of papers deals with the fossils found in Europe (particularly Spain and Sardinia) and recently in Africa. The publications of Bornemann (1883, 1884) and Simon (1939, 1941) are faunal and systematic, while Hinde (1889) in a very important summary included all archaeocyathid knowledge up to his time.

In America the first archaeocyathid was found by Bayfield (1845). The first systematic paper was published by Elkanah Billings (1861), the distinguished Canadian paleontologist. It was he who named the genus *Archaeocyathus* and thus a hundred years later gave a name to a phylum. In the United States, Ford (1873a, b; 1878), Meek (1868), and particularly Walcott (1886-1917) described archaeocyathids from American localities. The American species in particular, and the phylum in general received a great deal of attention from Okulitch who has been working on them continuously since 1935. His well-known work together with that of his students and co-workers dominates the American literature. The present paper could not have been written without Okulitch's articles, in which most of the bibliographic references were found. Future workers will have an equally great debt to Okulitch's industry.

### *Affinities of archaeocyathids*

Billings (1861a) in describing the first archaeocyathid species, thought that it might be a sponge or a coral. Four years later he described additional species. Because of the small number of specimens that he had, he could not have done other than to assign them

to existing and recognized phyla. He subsequently changed his mind and placed them with Protozoa.

For the same reason, namely, the lack of adequate numbers of fossils, the later workers attempted to fit them into some existing phylum. These were the grounds for affiliating them with foraminifers and other protozoans, calcareous algae, sponges, corals and other coelenterates.

Later researchers, namely, Taylor (1910), Bedford and Bedford (1936), Vologdin (1940) and Okulitch (1943), all believed strongly that archaeocyathids were an independent branch of Porifera. The difficult taxonomic position of the group was well recognized, and reflected itself by usage of terms subphylum (Okulitch) or subtype (Vologdin). Or they were considered to constitute a class of equal standing with calcareous or siliceous sponges. The uncertainty of their placement ended with the publication of Okulitch and Laubenfels (1953), where they were assigned to a phylum of their own.

The most comprehensive and the most recent classification is that of Hill (1964c, 1965a). She considers archaeocyathids "as a primitive phylum of single multicellular animals, with a level of organization lying between that of Protozoa and that of Porifera" (1964c, p. 250).

Whether or not the group can be placed between protozoans and sponges in the system of classification on the basis of the level of organization is a difficult question. The concept of "complexity" or "primitiveness" of sponges is based on studies of their cellular organization, a part of anatomy little known from fossil record. Sponges, at least on the species level, are characterized by lack of individuality. One may think of sponges as a morphologically plastic, well-adapted group. There appear, of course, to be some exceptions, and thus perhaps glass sponges may show less variation. On the other hand, protozoans do not exhibit any morphological variation on such a grand scale. I would, for the time being, prefer not to affiliate archaeocyathids with either of these two groups.

#### *Classification of archaeocyathids*

Recently E. H. McKee (1963) threw serious doubt on the classification and identification of *Ethmophyllum whitneyi*, *E. cooperi* and *Ajaciocyathus nevadensis*. He has questioned the taxonomy of these three entities. While I recognize his contribution, I am unable to pass judgment, and therefore I have followed the classification of Okulitch (1943 and subsequent) and Hill (1964c, 1965a).

Hill (1964c, 1965a) divides the phylum into two classes: Regularia and Irregularia. The division is shown on Table 1.

CHARACTER	REGULARIA	IRREGULARIA
Walls	One or Two	One or Two
Radial Skeletal Elements	Rods or Septa	Rods or Taeniae or Radial Tubules
Tabulae	Present or Absent	Present or Absent
Inner Wall Developed	Before Dissepiments	After Dissepiments

TABLE I. Characters used for classification of Regularia and Irregularia. (Modified after Hill, 1964c).

The following is the classification of North American archaeocyathids modified after Hill (1964c, 1965a) and Okulitch (1943-1956).

Phylum Archaeocyatha Vologdin, 1937

Class Regularia Vologdin, 1937

Order Monocyathida Okulitch, 1935

Family Monocyathidae Bedford and Bedford, 1934

Genus *Monocyathus* Bedford and Bedford, 1934

*Monocyathus* Sp.

Order Ajacicyathida Bedford and Bedford, 1939

Family Ajacicyathidae Bedford and Bedford, 1939

Genus *Ajacicyathus* Bedford and Bedford, 1939

*Ajacicyathus ajax* (Taylor)

*Ajacicyathus argentus* (Okulitch)

*Ajacicyathus clarus* (Vologdin)

*Ajacicyathus nevadensis* (Okulitch)

*Ajacicyathus osilinka* Okulitch and Roots, 1947

*Ajacicyathus profundomimus* Okulitch, 1943

*Ajacicyathus purcellensis* Okulitch, 1947

*Ajacicyathus rimouski* Okulitch, 1943

- Ajacyathus undulatus* Okulitch, 1948  
*Ajacyathus weeksi* Okulitch, 1943  
*Ajacyathus yukonensis* Kawase and Okulitch, 1957  
*Ajacyathus* sp.
- Genus *Archaeocyathellus* Ford, 1873  
*Archaeocyathellus dwighti* (Walcott)  
*Archaeocyathellus rarus* (Ford)  
*Archaeocyathellus renselaericus* Ford, 1873  
*Archaeocyathellus uniporosus* Okulitch, 1943  
*Archaeocyathellus walcotti* Okulitch, 1943  
*Archaeocyathellus* sp.
- Genus *Archaeofungia* Taylor, 1910  
*Archaeofungia obliqua* Okulitch, 1955  
*Archaeofungia* sp.
- Genus *Loculicyathus* Vologdin, 1931  
*Loculicyathus ellipticus* Kawase and Okulitch, 1957
- Genus *Nevadacyathus* Okulitch, 1943  
*Nevadacyathus septaporus* (Okulitch)
- Family Ethmophyllidae Okulitch, 1943
- Genus *Ethmophyllum* Meek, 1868  
*Ethmophyllum americanum* Okulitch, 1952  
*Ethmophyllum cooperi* Okulitch, 1952  
*Ethmophyllum lineatus* Greggs, 1959  
*Ethmophyllum ratum* Vologdin, 1940  
*Ethmophyllum whitneyi* Meek, 1868  
*Ethmophyllum* sp.
- Family Erboocyathidae Vologdin and Zhuravleva, 1956
- Genus *Syringocyathus* Vologdin, 1937  
*Syringocyathus canadensis* Okulitch, 1955  
*Syringocyathus inyoensis* Okulitch, 1954  
*Syringocyathus* sp.
- Family Bronchocyathidae Bedford and Bedford, 1936
- Genus *Thalamocyathus* Gordon, 1920  
*Thalamocyathus* sp.
- Family Carinacyathidae Krasnopeeva, 1953
- Genus *Carinacyathus* Vologdin, 1932  
*Carinacyathus perforatus* Kawase and Okulitch, 1957

## Family Coscinocyathidae Taylor, 1910

Genus *Coscinocyathus* Bornemann, 1884*Coscinocyathus cassiariensis* Kawase and Okulitch, 1957*Coscinocyathus dentocanis* Okulitch, 1943*Coscinocyathus inequivallus* Kawase and Okulitch, 1957*Coscinocyathus miniporosus* Bedford and Bedford, 1937*Coscinocyathus multiporosus* Kawase and Okulitch, 1957*Coscinocyathus rhyacoensis* Okulitch, 1948*Coscinocyathus serratus* Kawase and Okulitch, 1957*Coscinocyathus tubicornus* Kawase and Okulitch, 1957*Coscinocyathus veronicus* Kawase and Okulitch, 1957*Coscinocyathus* sp.Genus *Coscinoptycta* Broili, 1915*Coscinoptycta* sp.

## Family Alatacyathidae Zhuravleva, 1955

Genus *Ethmocoscinus* Simon, 1939*Ethmocoscinus* sp.

## Class Irregularia Vologdin, 1937

## Order Rhizacyathida Zhuravleva, 1955

## Family Rhizacyathidae Bedford and Bedford, 1939

Genus *Archaeopharetra* Bedford and Bedford, 1936*Archaeopharetra typica* Bedford and Bedford, 1936*Archaeopharetra* sp.

## Order Archaeocyathida Okulitch, 1935

## Family Metacyathidae Bedford and Bedford, 1934

Genus *Dendrocyathus* Okulitch and Roots, 1947*Dendrocyathus unexpectans* Okulitch and Roots, 1947*Dendrocyathus* sp.Genus *Metethmophyllum* Okulitch, 1943*Metethmophyllum labradorensis* (Okulitch)*Metethmophyllum meeki* (Walcott)*Metethmophyllum resseri* Okulitch, 1943

## Family Archaeocyathidae Hinde, 1889

Genus *Archaeocyathus* Billings, 1861*Archaeocyathus arborensis* Okulitch, 1954*Archaeocyathus atlanticus* Billings, 1861*Archaeocyathus borealis* Okulitch, 1955*Archaeocyathus constrictus* (Raymond)



*Archaeocyathus latus* (Vologdin)

*Archaeocyathus oculiformis* Okulitch, 1955

*Archaeocyathus taeniatus* Okulitch, 1948

*Archaeocyathus yavorskii* (Vologdin)

*Archaeocyathus* sp.

Genus *Protopharetra* Bornemann, 1884

*Protopharetra dunbari* Okulitch, 1943

*Protopharetra raymondi* Okulitch, 1935

*Protopharetra rootsi* Okulitch and Roots, 1947

*Protopharetra* sp.

Genus *Pycnoidocyathus* Taylor, 1910

*Pycnoidocyathus amourensis* (Okulitch)

*Pycnoidocyathus ceratodictyoides* (Raymond)

*Pycnoidocyathus columbianus* (Okulitch)

*Pycnoidocyathus dissepimentalis* (Okulitch)

*Pycnoidocyathus donaldi* (Okulitch)

*Pycnoidocyathus loupensis* (Okulitch)

*Pycnoidocyathus occidentalis* (Okulitch)

*Pycnoidocyathus orthoconicus* (Okulitch)

*Pycnoidocyathus profundus* (Billings)

*Pycnoidocyathus septimus* (Okulitch)

*Pycnoidocyathus solidus* Kawase and Okulitch, 1957

*Pycnoidocyathus* sp.

Genus *Copleicyathus* Bedford and Bedford, 1937

*Copleicyathus laminosus* Okulitch, 1948

Family Archaeosyconidae Zhuravleva, 1956

Genus *Archaeosycon* Taylor, 1910

*Archaeosycon billingsi* (Walcott)

*Archaeosycon evansi* Okulitch, 1948

*Archaeosycon vesiculosum* Okulitch, 1943

*Archaeosycon* sp.

Family Metacoscinae Bedford and Bedford, 1936

Genus *Metacoscinus* Bedford and Bedford, 1934

*Metacoscinus deasensis* Okulitch, 1955

*Metacoscinus gabrielsensis* Okulitch, 1955

*Metacoscinus poolensis* Kawase and Okulitch, 1957

*Metacoscinus* sp.

Genus *Paracoscinus* Bedford and Bedford, 1936

*Paracoscinus* sp.

Genus *Pycnoidocoscinus* Bedford and Bedford, 1936

*Pycnoidocoscinus rectiporus* Okulitch, 1948

Genus *Claruscyathus* Vologdin, 1932

*Claruscyathus ketsaensis* Kawase and Okulitch, 1957

*Claruscyathus obliquus* (Okulitch)

*Claruscyathus solidus* Vologdin, 1937

Order Syringocnematida Okulitch, 1935

Family Syringocnematidae Taylor, 1910

Genus *Syringocnema* Taylor, 1910

*Syringocnema colwillensis* Greggs, 1959

*Syringocnema* sp.

#### GENERA OF DIFFICULT OR UNCERTAIN AFFINITIES

Genus *Atikokania* Walcott, 1912

*Atikokania lawsoni* Walcott, 1912

*Atikokania irregularis* Walcott, 1912

Genus *Exocyathus* Bedford and Bedford, 1937

*Exocyathus canadensis* Okulitch, 1943

*Exocyathus regularis* Okulitch, 1943

Genus *Haguia* Walcott, 1899

*Haguia sphaerica* Walcott, 1899

Genus *Matthewcyathus* Okulitch, 1940

*Matthewcyathus pavonoides* (Matthew)

Genus *Wilbernicyathus* Wilson, 1950

*Wilbernicyathus donegani* Wilson, 1950

## CATALOG OF GENERA AND SPECIES

### *AJACICYATHUS* Bedford and Bedford, 1939

#### *Ajacyathus ajax* (Taylor)

1958. *Ajacyathus ajax*

Okulitch and Greggs, Jour. Paleo., **32**, p. 620.

Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

#### *Ajacyathus* (*Archaeocyathus*) cf. *clarus* (Vologdin)

See: *Ajacyathus clarus* (Vologdin)

#### *Ajacyathus argentus* (Okulitch)

1935. *Archaeocyathus argentus*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, pp. 100-101, pl. 2, fig. 6.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9325, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Ajacyathus argentus*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 57, pl. 1, fig. 6.

Lower Cambrian: Waucobian, Silver Peak, Nevada.

Holotype: 9325, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1960. *Robustocyathus argentus*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 113, 134.

Lower Cambrian: North America.

#### *Ajacyathus clarus* (Vologdin)

1943. *Ajacyathus* (*Archaeocyathus*) cf. *clarus*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 13.

Cambrian: Nevada and California.

1947. *Ajacyathus clarus*

Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.

Lower Cambrian: Aiken Lake Area, British Columbia, Canada.

1947. *Ajacyathus clarus*

Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, p. 40, pl. 1, fig. 5.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake Area, British Columbia, Canada.

Referred specimens: 12762 in the collection of Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacyathus clarus*

Okulitch and Gregg, Jour. Paleo., **32**, p. 620.

Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

*Ajacyathus nevadensis* (Okulitch)1935. *Archaeocyathus nevadensis*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 101, pl. 1, figs. 7-9; pl. 2, fig. 1g and fig. 3.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9327 in Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Ajacyathus nevadensis*

Okulitch, Geol. Soc. Am., Spec. Papers, **48**, p. 55, text-figs. 18a, b; pl. 1, figs. 1-2, 4.

Lower Cambrian: (Waucobian) at Silver Peak, Nevada, and Inyo County, California.

Holotype: 9327 in Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1948. *Ajacyathus nevadensis*

Okulitch, Jour. Paleo., **22**, p. 341, pl. 53, fig. 1.

Lower Cambrian: Donald Formation, Purcell Range, British Columbia, Canada.

1950. *Ajacyathus nevadensis*

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo Area, British Columbia, Canada.

1952. *Ajacyathus nevadensis*  
Moore *et al.*, Invertebrate fossils, figs. 3-11 (2).  
Lower Cambrian: Nevada.
1952. *Ajacyathus nevadensis*  
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 28, pl. 7, figs. 5, 6; pl. 9, fig. 4.  
Lower Cambrian: pleospongian reef, west of Caborca, Sonora, Mexico, and at Silver Peak, Nevada.  
Referred specimens: 111815, U. S. National Museum, Washington, D. C.
1953. *Ajacyathus nevadensis*  
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.  
Lower Cambrian: Inyo County, California.
1953. *Ajacyathus nevadensis*  
Shrock and Twenhofel, Principles of invertebrate paleontology, figs. 3-9D.
1954. *Ajacyathus nevadensis*  
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, p. 56, pl. 9, figs. 5, 6; pl. 11, fig. 4.  
Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico and at Silver Peak, Nevada.  
Referred specimen: 111815, U. S. National Museum, Washington, D. C.
1954. *Ajacyathus nevadensis*  
Okulitch, Jour. Paleo., **28**, pp. 293-294, pl. 28, figs. 6, 7.  
Lower Cambrian: Inyo County, California.  
Referred specimens: Museum of Paleontology, University of California, Berkeley.
1955. *Ajacyathus nevadensis*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 49, pl. 2, fig. 2.  
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.  
Referred specimen: 12360, Geological Survey of Canada, Ottawa, Canada.
1955. *Ajacyathus nevadensis*  
Okulitch, Treatise on Invertebrate Paleontology, Part E Archaeocyatha, p. E10, figs. 1, 6, 8, 9a, and 8, 9b.  
Lower Cambrian: North America.

1956. *Ajaciccyathus nevadensis*  
Okulitch, 20 Inter. Geol. Congress, Mexico. Geol. paleont. region Caborca, norponiente Sonora, pt. 1, p. 56, pl. 9, figs. 5, 6, pl. 11, fig. 4.  
Lower Cambrian: archaeocyathid reef west of Caborca, Sonora, Mexico, and at Silver Peak, Nevada.  
Referred specimen: 111815, U. S. National Museum, Washington 25, D. C.
1958. *Ajaciccyathus nevadensis*  
Fenton and Fenton, The Fossil Book, figs. on p. 67.  
Early Cambrian: Nevada.
1958. *Ajaciccyathus nevadensis*  
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 619, 620, 621.  
Lower Cambrian: Old Dominion Limestone, Colville, Washington.  
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.  
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.  
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.  
Lower Cambrian: Atan Group, McDame Creek area, British Columbia, Canada.
1959. *Ajaciccyathus nevadensis*  
Greggs, Jour. Paleo., **33**, pp. 63-64, pl. 11, fig. 7; pl. 12, figs. 10, 11; pl. 14, fig. 6.  
Lower Cambrian: Colville, Stevens County, Washington; and on the south fork of the Salmo River at the base of the Laib Group, British Columbia, Canada.  
Referred specimens: CO17b-2, CL11c-6, CL7b-7 and SB-4, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.
1960. *Ajaciccyathus nevadensis*  
Easton, Invertebrate paleontology, p. 119, figs. 3.9 (1a, 1b).  
Lower Cambrian: U.S.A.
1960. *Ajaciccyathus nevadensis*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 112.  
Lower Cambrian: North America.

*Ajacyathus nevadensis* (Okulitch)

See also: *Ethmophyllum whitneyi*, Meek, 1868.

*Ajacyathus osilinka*, Okulitch and Roots, 19471947. *Ajacyathus osilinka*

Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.

Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Ajacyathus osilinka*

Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 40-41, pl. 1, fig. 4.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.

Holotype: 12763 in the collection of the Geological Survey of Canada, Ottawa, Canada.

1950. *Ajacyathus osilinka*

Little, Canada Geol. Surv. paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Ajacyathus osilinka*

Okulitch and Greggs, Jour. Paleo., **32**, p. 620.

Cambrian: upper group of the Wolverine Complex, Osilinka Valley, Aiken Lake, British Columbia, Canada.

*Ajacyathus profundomimus*, Okulitch, 19431943. *Ajacyathus profundomimus*

Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 57, pl. 1, fig. 3.

Lower Cambrian: Forteau Formation, Labrador, and at Troy, New York.

Holotype: 108096, U. S. National Museum, Washington, D. C.

1946. *Ajacyathus profundomimus*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **40**, sec. 4, p. 86, pl. 6, fig. 4.

Cambrian: Labrador, Canada.

1960. *Ajacyathus profundomimus*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 113.

Lower Cambrian: North America.

- Ajacyathus purcellensis*, Okulitch, 1947 (*in* Okulitch and Roots, 1947)
1943. *Ajacyathus* sp.  
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 13, pl. 1, fig. 5.  
Lower Cambrian: Dogtooth Range, British Columbia, Canada.  
Holotype: 108118, U. S. National Museum, Washington, D. C. [now in Geological Survey of Canada, Ottawa, Canada].
1947. *Ajacyathus purcellensis*  
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.  
Lower Cambrian: Aiken Lake area, British Columbia, Canada.
1947. *Ajacyathus purcellensis*  
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 39-40, pl. 1, figs. 1-3, 12.  
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.  
Referred specimens: 12758-12761, Geological Survey, Canada, Ottawa, Canada.
1948. *Ajacyathus purcellensis*  
Okulitch, Jour. Paleo., **22**, p. 342, pl. 53, figs. 2, 3.  
Lower Cambrian: Donald Formation, Purcell Range, British Columbia, Canada.  
Types: 108118, U. S. National Museum (now with the collection of the Geological Survey of Canada, Ottawa, Canada); 9514, Geological Survey of Canada, Ottawa, Canada, and 8, Okulitch Collection, University of British Columbia, Vancouver, Canada.
1950. *Ajacyathus purcellensis*  
Little, Canada Geol. Surv., Paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo Area, British Columbia, Canada.
1957. *Ajacyathus purcellensis*  
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 915, pl. 109, fig. 1.  
Lower Cambrian: (Lord's Group C sediments), Wolf Lake area, Yukon, Canada.



Referred specimens: Collection 24035 (nos. 35-Y-5, 6, 7); and specimen 13325, Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacyathus purcellensis*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 620, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1958. *Ajacyathus* cf. *purcellensis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 620.

Cambrian: upper group of the Wolverine Complex. Aiken Lake, Osilinka Valley, British Columbia, Canada.

1960. *Ajacyathus purcellensis*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 113.

Lower Cambrian: North America.

*Ajacyathus rimouski*, Okulitch, 1943

1943. *Ajacyathus rimouski*

Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 58, pl. 2, figs. 4, 5.

Lower Cambrian: Bic Harbour, Rimouski County, Province of Quebec, Canada.

Holotype: 108098; paratypes: 108099 at U. S. National Museum, Washington, D. C.

1945. *Ajacyathus rimouski*

Rasetti, Natur. Canadien, **72**, p. 59.

Lower Cambrian: Sillery Formation, Bic, Quebec, Canada.

1952. *Ajacyathus rimouski*

Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 28, pl. 9, fig. 5.

Lower Cambrian: west end of the Proveedora, Sonora, Mexico, and Bic Harbour, Quebec, Canada.

Referred specimen: 111823, U. S. National Museum, Washington, D. C.

1954. *Ajacyathus rimouski*  
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, p. 57,  
pl. 11, fig. 5.  
Lower Cambrian: west end of the Proveedora, Sonora,  
Mexico, and Bic Harbour, Quebec, Canada.  
Referred specimen: 111823, U. S. National Museum, Wash-  
ington, D. C.
1956. *Ajacyathus rimouski*  
Okulitch, 20th Int. Geol. Congress, Mexico, Geol. palent.  
region Caborca, norponiente Sonora, pt. 1, p. 57, pl. 11,  
fig. 5.  
Lower Cambrian: west end of the Proveedora, Sonora,  
Mexico, and Bic Harbour, Quebec, Canada.  
Referred specimen: 111823, U. S. National Museum, Wash-  
ington 25, D. C.
1958. *Ajacyathus rimouski*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 617.  
Lower Cambrian: Old Dominion Limestone, Colville, Wash-  
ington.
1959. *Ajacyathus rimouski*  
Greggs, Jour. Paleo., **33**, pp. 64-65, pl. 13, figs. 1-3.  
Lower Cambrian: Colville, Washington, and (Laib Group)  
on the south fork of the Salmo River, British Columbia,  
Canada  
Referred specimens: CL 6b-7; CL 7b-3; CL 3a-2.  
Paleontology Collection, University of British Columbia,  
Vancouver, British Columbia, Canada.

*Ajacyathus undulatus*, Okulitch, 1948

1948. *Ajacyathus undulatus*  
Okulitch, Jour. Paleo., **22**, no. 3, p. 342, pl. 53, fig. 4.  
Lower Cambrian: Donald Formation, Dogtooth Mountains,  
Purcell Range, British Columbia, Canada.  
Holotype: 9515, Geological Survey of Canada, Ottawa,  
Canada.
1950. *Ajacyathus undulatus*  
Little, Canada Geol. Surv., Paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Colum-  
bia, Canada.

1955. *Ajacyathus undulatus*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 49-50, pl. 2, fig. 9.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Referred specimen: 12361 in the collection of the Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacyathus undulatus*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

*Ajacyathus weeksi*, Okulitch, 19431943. *Ajacyathus weeksi*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 58, pl. 2, figs. 1-3.

Lower Cambrian: 10 miles northeast of Silver Peak, Nevada.

Holotype: 108097, U. S. National Museum, Washington D. C.

1960. *Robustocyathus weeksi*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 113, 134.

Lower Cambrian: North America.

*Ajacyathus yukonensis*, Kawase and Okulitch, 19571957. *Ajacyathus yukonensis*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 915-916, pl. 109, fig. 2.

Lower Cambrian: (Lord's Group C sediments), Wolf Lake area, Yukon, Canada.

Holotype: 35-Y-13.I; 13326; Collection 24035, in Geological Survey of Canada, Ottawa, Canada.

1958. *Ajacyathus yukonensis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Ajaciccyathus* sp.

1950. *Ajaciccyathus* sp.

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1953. *Ajaciccyathus* sp.

Shrock and Twenhofel, Principles of invertebrate paleontology, figs. 3-11 G-H.

Lower Cambrian: Nevada.

1960. *Ajaciccyathus*

Clark and Stearn, The Geological Evolution of North America, fig. A-6.

1962. *Ajaciccyathus* sp.

Orlowski, Polska Akad. Nauk, p. 110, fig. 1.

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*Ajaciccyathus nevadensis* (Okulitch)

See: *Ajaciccyathus nevadensis* (Okulitch)

*ARCHAEOCYATHELLUS* Ford, 1873*Archaeocyathellus* (*Archaeocyathellus*) *rensselaericus* (Ford)

See: *Archaeocyathellus rensselaericus* Ford, 1873

*Archaeocyathellus atreus* (Walcott)

See: *Incertae sedis*

*Archaeocyathellus dwighti* (Walcott)

1889. *Archaeocyathus Dwighti*

Walcott, Am. Jour. Sci., **37**, p. 388.

- 1889 [1890]. *Archaeocyathus* (*Archaeocyathellus*) *dwrighti*

Walcott, Proc. U. S. Nat. Mus., **12**, p. 34.

Lower Cambrian: Troy and near Greenwich, Washington County, New York.

Type: 18352, National Museum, Washington, D. C.

1890. *Archaeocyathus* (*Archaeocyathellus*) *dwrighti*

Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 54, figs. 4, 4a.

Lower Cambrian: Troy and near Greenwich, Washington County, New York.

Type: 18352, National Museum, Washington, D. C.

1891. *Archaeocyathus dwighti*

Walcott, U. S. Geol. Surv. Bull. 81, p. 153.

Lower Cambrian: Washington County, New York.

1895. *Archaeocyathus Dwighti*

Head, Palaeozoic sponges of North America, p. 7.

1916. *Archaeocyathus dwighti*

Walcott, Smithsonian, Misc. Coll., 64, no. 5, p. 317.

Lower Cambrian: Washington County, New York.

1943. *Archaeocyathellus dwighti*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 62, pl. 3, figs. 6, 7.

Lower Cambrian: Schodack and Greenwich, Washington County, New York.

Cotypes: 18353 and 18352, U. S. National Museum, Washington, D. C.

1960. *Archaeocyathellus dwighti*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.

Lower Cambrian: North America.

*Archaeocyathellus profundus* (Billings)

See: *Pycnoidocyathus profundus* (Billings)

*Archaeocyathellus (Protocyathus) septapora* (Okulitch)

See: *Nevadacyathus septaporus* (Okulitch)

*Archaeocyathellus rarus* (Ford)

1878. *Protocyathus rarus*

Ford, Am. Jour. Sci. Arts, ser. 3, 15, no. 86, art. 16, pp. 124-126, text-figs. 1a, 1b.

Cambrian: conglomerate-limestone [of the Lower Potsdam Group of Ford] at Troy, New York.

Holotype: 52 2060, New York State Museum, Albany,

1

New York.

1886. *Ethmophyllum rarum*

Walcott, U. S. Geol. Surv. Bull. 30, pp. 87-89, pl. 5, figs. 2, 2a-b.

Middle Cambrian: conglomerate-limestone, on the ridge east of the city of Troy, New York.

Type: 52 2060, New York State Museum, Albany,

1

New York.

1889. *Ethmophyllum rarum*

Lesley, A dictionary of the fossils of Pennsylvania, 1, p. 227, figs. 2, 2a and 2b on p. 227.

Lower Cambrian: conglomerate-limestone ridge east of Troy, New York.

1889. *Archaeocyathus rarum*

Walcott, Am. Jour. Sci., 37, p. 388.

1889. *Ethmophyllum rarum*

Miller, North American geology and palaeontology, p. 160. Cambrian: [Upper Taconic of Miller].

1890. *Archaeocyathus (Archaeocyathellus) rarus*

Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 54, figs. 2, 2a-b.

Lower Cambrian: conglomerate-limestone, on the ridge east of the city of Troy, New York.

Type: 15306, National Museum, Washington, D. C.

1890. *Ethmophyllum rarum*

Ulrich, Ill. Geol. Surv., 8, p. 240.

1891. *Protocyathus rarum*

Walcott, U. S. Geol. Surv. Bull. 81, p. 152.

Cambrian: near Troy, and south of Schodaek landing, Columbia County, New York.

1895. *Archaeocyathus rarus*

Head, Palaeozoic sponges of North America, p. 7.

1895. *Ethmophyllum rarum*

Head, Palaeozoic sponges of North America, p. 10.

1895. *Protocyathus rarus*

Head, Palaeozoic sponges of North America, p. 11.

1910. *Archaeocyathus rarus*

Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 64, 119, fig. 26 (1).

Cambrian: North America.

1935. *Archaeocyathus rarus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4,  
pp. 91, 99.  
Lower Cambrian: Troy, New York.
1937. *Archaeocyathus rarus*  
Ting, Neus Jahrb. Mineral., **78**, p. 360.
1937. *Archaeocyathus rarum*  
Ting, Neus Jahrb. Mineral., **78**, text-fig. 8c.
1939. *Archaeocyathellus rarus*  
Simon, Abhandl. Senckenberg. naturf. Ges., **448**, p. 34.
1939. *Protocyathus rarus*  
Bedford and Bedford, Kyancutta Mus. Mem., no. 6, p. 72.
1943. *Archaeocyathellus rarus*  
Okulitch, Geol. Soc. Am., Spec. Papers, **48**, pp. 63-64, pl. 3,  
figs. 10-13.  
Lower Cambrian: ridge east of Troy, New York.  
Plesiotype: 15306, U. S. National Museum, Washington,  
D. C.
1960. *Archaeocyathellus rarus*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.  
Lower Cambrian: North America.
1965. *Protocyathus rarus*  
Hill, Trans-Antarctic Expedition 1955-1958, Sci. Rept.  
no. 10, p. 63, text-fig. 14.6.  
Lower Cambrian: Troy, New York.

*Archaeocyathellus rensselaericus* (Ford)

1873. *Archaeocyathus ? Rensselaericus*  
Ford, Am. Jour. Sci. Arts, ser. 3, **5**, no. 27, pp. 211-213,  
fig. 1.  
Lower Cambrian: conglomerate-limestone and even bedded  
limestones of Potsdam [of Ford] Group, near Troy, New  
York.  
Holotype: 53 2061, New York State Museum, Albany,  
1  
New York.

1873. *Archaeocyathellus Rensselaericus*  
Ford, Am. Jour. Sci. Arts, ser. 3, **6**, no. 32, pp. 135, 136.  
Cambrian: Troy, New York.
1880. *Archaeocyathus Rensselaericus*  
Roemer, Lethaea palaeozoica, I Theil, p. 300.  
Cambrian: conglomerates of "Potsdam Group," Troy, New York.
1880. *Archaeocyathellus Rensselaericus*  
Dana, Manual of geology, p. 177.  
Cambrian: [Potsdam of Dana] Troy, New York.
1884. *Archaeocyathus Rensselaericus*  
Bornemann, Z. dtsch. geol. Ges., **36**, p. 702.
1886. *Ethmophyllum rensseleericum*  
Walcott, U. S. Geol. Surv. Bull. 30, pp. 84, 85-87, pl. 5, fig. 1f (not pl. 5, figs. 1, a-e).  
Middle Cambrian: conglomerate-limestone on the ridge east of the city of Troy, New York.  
Okulitch, 1943, pp. 60-61, states that only pl. 5, fig. 1f is *Archaeocyathellus rensseleericus*. Specimens represented in figs. 1, 1a-e are *A. walcotti*.
1889. *Ethmophyllum rensseleericum*  
Lesley, A dictionary of fossils of Pennsylvania, **1**, p. 228, figs. 1, 1a-e.  
Lower Cambrian: conglomerate-limestone near Troy, New York.
1889. *Ethmophyllum Rensselaericum*  
Nicholson and Lydekker, A manual of palaeontology, 3rd ed., figs. 72, A and B.  
Lower Cambrian: of North America.
1889. *Archaeocyathus Rensselaericus*  
Hinde, Quart. Jour. Geol. Soc. London, **45**, p. 133.  
Cambrian: Nevada.
1889. *Archaeocyathus Rensselaericum*  
Walcott, Am. Jour. Sci., **37**, p. 388.
1889. *Ethmophyllum rensseleericum*  
Miller, North American geology and palaeontology, p. 160.  
Cambrian: [Upper Taconic of Miller].



1890. *Ethmophyllum rensseleericum*  
Ulrich, Illinois Geol. Surv., 8, p. 240.
1891. *Archaeocyathus rensseleericum*  
Walcott, U. S. Geol. Surv. Bull. 81, p. 152.  
Cambrian: near Troy, and south of Schodack landing in  
Columbia County, New York.
1891. *Archaeocyathellus Rensseleericus*  
Bornemann, Nova Acta der Ksl. Leop.-Carol. Deutschen  
Akad. der Natur. Bd. 56, no. 3, pp. 495-499.
1895. *Archaeocyathellus Rensseleericus*  
Head, Palaeozoic sponges of North America, p. 7.
1895. *Archaeocyathus Rensseleericus*  
Head, Palaeozoic sponges of North America, p. 7.
1895. *Ethmophyllum Rensseleericum*  
Head, Palaeozoic sponges of North America, p. 10.
1909. *Archaeocyathus rensseleericus*  
Chamberlin and Salisbury, A college text-book of geology,  
p. 500, figs. 376, a and b.  
Cambrian.
1910. *Archaeocyathus Rensseleericus*  
Taylor, Roy. Soc. S. Australia, Mem. 2, p. 64.  
Cambrian: North America.
1921. *Archaeocyathus rensseleericus*  
Grabau, A textbook of geology, part II, historical geology,  
p. 227, figs. 1009, a and b.  
Cambrian.
1924. *Archaeocyathus rensseleericus*  
Schuchert, A textook of geology, part II, historical geology,  
2nd ed., p. 189, pl. 4, fig. 5.  
Lower Cambrian.
1930. *Archaeocyathus rensseleericus*  
Chamberlin *et al.*, College textbook of geology, part II, his-  
torical geology, p. 484, figs. 382, a, b.
1935. *Archaeocyathus rensseleericus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, 29, sec. 4, p. 99.  
Lower Cambrian: Labrador and Nevada.

1937. *Archaeocyathus rensselaericus*  
Ting, Neus Jahrb. Mineral., **78**, pp. 330, 360, text-fig. 8b.
1939. *Archaeocyathellus (Archaeocyathellus) rensselaericus*  
Simon, Abhandl. Senck. natur. Ges., **448**, p. 19.
1939. *Archaeocyathellus ? rensselaericus*  
Bedford and Bedford, Kyancutta Mus. Mem. no. 6, pp. 71-72.
1943. *Archaeocyathellus rensselaericus*  
Okulitch, Geol. Soc. Am., Spec. Paper 48, pp. 60-61, pl. 3, fig. 1.  
Lower Cambrian: conglomerate-limestone on ridge east of Troy, New York.
1944. *Archeocyathus rensselaericus*  
Shimer and Shrock, Index fossils of North America, p. 56, pl. 17, figs. 14, 15.  
Lower Cambrian: Vermont?, New York, New Jersey.
1955. *Archaeocyathellus rensselaericus*  
Okulitch, Treatise on Invertebrate Paleontology, Part E, Archaeocyatha, p. E10.  
Lower Cambrian: North America.
1959. *Archaeocyathus rensselaericus*  
Stirton, Time, life and man, p. 167, fig. 91 (a).  
Cambrian.
1960. *Archaeocyathellus rensselaericus*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.  
Lower Cambrian: Troy, New York.
1965. *Archaeocyathellus rensselaericus*  
Hill, Trans-Antarctic Expedition 1955-1958, Sci. Rept. no. 10, p. 63, text-fig. 14.5.  
Lower Cambrian: Troy, New York.
- Archaeocyathellus uniporosus* Okulitch, 1943
1943. *Archaeocyathellus? uniporosus*  
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 62-63, pl. 3, figs. 8-9.  
Lower Cambrian: Schodack and Greenwich, Washington County, New York.

Holotype: 108100, U. S. National Museum, Washington, D. C.

1960. *Archaeocyathellus? uniporosus*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.

Lower Cambrian: North America.

*Archaeocyathellus walcotti* Okulitch, 1943

1886. *Ethmophyllum rensselearicum* (in part)

Walcott, U. S. Geol. Surv. Bull. 30, pp. 85-87, pl. 5, figs. 1, 1a-e.

Middle Cambrian: conglomerate-limestone on the ridge east of the city of Troy, New York.

1890. *Archaeocyathus (Arthaeocyathellus) rensselearicus*

Walcott, 10th Ann. Rept., U. S. Geol. Surv., pp. 600-601, pl. 54, figs. 1, 1a-e.

Lower Cambrian: conglomerate-limestone on the ridge east of the city of Troy, New York.

Type: 15305, National Museum, Washington, D. C.

1943. *Archaeocyathellus walcotti*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 61-62, pl. 3, figs. 2-5.

Lower Cambrian: conglomeratic limestone on ridge east of Troy, New York.

Holotype: 15305a; paratypes: 15305b, c, d, e, U. S. National Museum, Washington, D. C.

1960. *Archaeocyathellus walcotti*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.

Lower Cambrian: North America.

*Archaeocyathellus* sp.

1886. *Ethmophyllum* sp.

Walcott, U. S. Geol. Surv. Bull. 30, p. 87, pl. 4, fig. 2.

Middle Cambrian: conglomerate-limestone, Troy, New York.

1950. *Archaeocyathellus* sp.

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1953. *Archaeocyathellus* sp.  
Shrock and Twenhofel, Principles of invertebrate paleontology, fig. 3-9C.
1958. *Archaeocyathellus* sp.  
Okulitch and Greggs, Jour. Paleo., **32**, p. 618.  
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
1959. *Archaeocyathellus* sp.  
Greggs, Jour. Paleo., **33**, p. 65, pl. 14, fig. 8.  
Lower Cambrian: Laib Group, south fork of the Salmo River, British Columbia, Canada.  
Referred specimen: SC-14a, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.  
(Specimen transferred to Geological Survey of Canada, Ottawa, no. 14316.)
1960. *Archaeocyathellus* sp.  
Easton, Invertebrate paleontology, p. 119, fig. 3.9(3).  
Lower Cambrian: USA.

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*Archaeocyathid*

See: *Incertae sedis*

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*Archaeocyathina*

See: *Incertae sedis*

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*ARCHAEOCYATHUS* Billings, 1861*Archaeocyathus arborensis* Okulitch, 1954

1953. *Archaeocyathus* sp.  
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.  
Lower Cambrian: Inyo County, California.
1954. *Archaeocyathus arborensis*  
Okulitch, Jour. Paleo., **28**, p. 295, pl. 28, figs. 1, 2.  
Lower Cambrian: Inyo County, California and Silver Peak, Nevada.  
Holotype: C107, University of British Columbia, Vancouver, Canada.

Other specimen: 32965, Museum of Paleontology, University of California, Berkeley, California.

1960. *Archaeocyathus arborensis*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 297.

Lower Cambrian: North America.

*Archaeocyathus (Archaeocyathellus) rarus* (Ford)

See: *Archaeocyathellus rarus* (Ford)

*Archaeocyathus argentus* Okulitch, 1935

See: *Ajacicyathus argentus* (Okulitch)

*Archaeocyathus atlanticus* Billings, 1861

1861. *Archeocyathus Atlanticus*

Billings, Geol. Surv. Canada, New Species of Lower Silurian Fossils, pp. 3-4, figs. 1-4 [however, fig. 4 is not *A. atlanticus*].

Lower Cambrian: Forteau Formation [Potsdam Group of Billings], Anse au Loup on the north shore of the Straits of Belle Isle, Labrador, Canada.

Holotype: 369, Geological Survey Canada, Ottawa, Canada.

1861 [1862]. *Archeocyathus Atlanticus*

Billings, Report on the Geology of Vermont, **2**, pp. 944-945, figs. 341-343.

Lower Cambrian: Forteau Formation [Potsdam Group of Billings], Anse au Loup on the north shore of the Straits of Belle Isle, Labrador, Canada.

1865. *Archeocyathus Atlanticus*

Billings, Geol. Surv. Canada, Palaeoz. Fossils, **1**, pp. 3-6, figs. 5a-c, also pp. 59, 355, 356.

Lower Cambrian: Forteau Formation [Potsdam of Billings], L'Anse au Loup, Straits of Belle Isle, Labrador, Canada; also Potsdam Group in Vermont.

1865. *Archoeocyathus atlanticus*

Dawson, Quart. Jour. Geol. Soc., London, **21**, p. 53.  
(Cambrian): Calciferous formation at Mingan, Canada.

1865. *Archoeocyathus atlanticus*

Dawson, Canadian Natur., new ser., **2**, p. 104.  
(Cambrian): Calciferous formation at Mingan, Canada.

1871. *Archeocyathus Atlanticus*  
Dana, Manual of Geology, p. 186, figs. 236A (a and b).  
Cambrian: [Potsdam of Dana], North Shore of the Straits of Belle Isle, Labrador, Canada.
1877. *Archeocyathus rensselaericus*  
Miller, The American Palaeozoic fossils, p. 42.  
Cambrian: [Lower Potsdam of Miller].
1877. *Archeocyathus atlanticus*  
Miller, The American Palaeozoic fossils, p. 42.  
Cambrian: [Potsdam Group of Miller].
1880. *Archaeocyathus Atlanticus*  
Roemer, Lethaea palaeozoica, I Theil, p. 300.  
Cambrian: "Potsdam Group," L'Anse au Loup, Belle Isle, Newfoundland and Labrador, Canada.
1880. *Archoeocyathus Atlanticus*  
Dana, Manual of Geology, p. 177, figs. 261 a and b.  
Cambrian: [Potsdam of Dana]; Straits of Belle Isle, Canada.
1884. *Archaeocyathus Atlanticus*  
Bornemann, Z. dtsch. geol. Ges., **36**, pp. 702-703.
1886. *Archaeocyathus Atlanticus*  
Walcott, U. S. Geol. Surv. Bull. 30, pp. 29, 38, 45, 50-51, 73-74, 75, 77, 78, 79, 84; pl. 2, figs. 1, 1a; pl. 3, figs. 1, 1a, b, 2, 2a.  
Middle Cambrian: L'Anse au Loup, on the straits of Belle Isle, Labrador, Canada, and Silver Peak, Nevada.
1887. *Archeocyathus Atlanticus*  
Walcott, Am. Jour. Sci., ser. 3, **34**, no. 200, art. 18, pp. 145-146.
1889. *Spirocyathus atlanticus*  
Hinde, Quart. Jour. Geol. Soc. London, **45**, pp. 136-138; pl. 5, figs. 8-10.  
Cambrian: L'Anse au Loup, Labrador, Canada.  
Types: in the Geological Survey of Canada, Ottawa, Canada.
1889. *Spirocyathus Atlanticus*  
Walcott, Am. Jour. Sci., **37**, p. 388.

1889. *Archaeocyathus atlanticus*  
Lesley, A dictionary of the fossils of Pennsylvania, 1, p. 30,  
figs. 1, 1a, 2, 2a on p. 30.  
Cambrian: L'Anse au Loup, Labrador, Canada, and Silver  
Peak, Nevada.  
Types: in Canadian Geological Survey, Ottawa, Canada.
1889. *Spirocyathus atlanticus*  
Nicholson and Lydekker, A Manual of palaeontology, 3rd  
ed., pp. 184–185, figs. 72C and 72D.  
Lower Cambrian: Canada.
1889. *Archaeocyathus atlanticus*  
Miller, North American geology and palaeontology, p. 154,  
figs. 89a and b.  
Cambrian: [Upper Taconic of Miller].
1890. *Spirocyathus atlanticus*  
Walcott, 10th Ann. Rept., Geol. Survey, p. 600, pl. 50,  
figs. 1, 1a–f; 2, 2a.  
Lower Cambrian: on the straits of Belle Isle, Labrador,  
Canada, and Silver Peak, Nevada.  
Referred specimen: 15301, National Museum, Washington,  
D. C.
1890. *Archaeocyathus atlanticus*  
Ulrich, Illinois Geol. Surv., 8, p. 240.
1891. *Spirocyathus atlanticus*  
Walcott, U. S. Geol. Surv. Bull. 81, pp. 78, 319.  
Cambrian: north side of the Straits of Belle Isle on the Lab-  
rador shore, at L'Anse au Loup, Labrador, Canada, and  
Silver Peak, Nevada.
1891. *Archaeocyathus Atlanticus*  
Bornemann, Nova Acta der Ksl. Leop.-Carol., Deutschen  
Akad. der Naturforscher. Bd. 56, no. 3, pp. 495–499.
1895. *Spirocyathus Atlanticus*  
Head, Palaeozoic sponges of North America, p. 7.
1895. *Spirocyathus Atlanticus*  
Dana, Manual of Geology, 4th ed., p. 470, figs. 508–508a.  
Lower Cambrian.

1906. *Archaeocyathus atlanticus*  
Spurr, U. S. Geol. Surv., Prof. Paper 55, p. 17.  
Lower Cambrian: Silver Peak Quadrangle, Nevada.
1910. *Spirocyathus Atlanticus*  
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 61, 64, 147, 150,  
text fig. 26(11).  
Cambrian: L'Anse au Loup on the Straits of Belle Isle,  
Labrador, Canada.
1912. *Spirocyathus atlanticus*  
Willis, U. S. Geol. Surv., Prof. Paper 71, p. 99.  
Lower Cambrian: Olenellus zone at Silver Peak in Western  
Nevada.
1934. *Spirocyathus atlanticus*  
Schuchert and Dunbar, Geol. Soc. Am., Mem. 1, p. 19.  
Lower Cambrian: Forteau Formation, Forteau Bay, Labra-  
dor, Canada.
1935. *Spirocyathus atlanticus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, 29, sec. 4,  
p. 100.  
Lower Cambrian: Labrador, Canada.
1937. *Archaeocyathus atlanticus*  
Okulitch, Proc. Geol. Soc. Am., p. 358.
1937. *Archaeocyathus atlanticus*  
Okulitch, Jour. Paleo, 11, pp. 251-252.
1937. *Archaeocyathus atlanticus*  
Vologdin, Problems of paleontology, pp. 453, 481.  
Cambrian: Labrador, Canada.
1937. *Spirocyathus atlanticus*  
Ting, Neus. Jahrb. Mineral., 78, pp. 330, 331, 334, 368.
1939. *Archaeocyathus atlanticus*  
Simon, Abhandl. Senck. naturf. Ges., 448, pp. 20, 38.
1939. *Archaeocyathus atlanticus*  
Bedford and Bedford, Kyancutta Mus. Mem., no. 6, pp. 71,  
78.
1940. *Spirocyathus atlanticus*  
Vologdin, Atlas of the leading forms of the fossil faunas of  
the USSR, p. 45.



Lower Cambrian: "middle horizons," North America.

1940. *Archaeocyathus atlanticus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34** (abstr.), p. 159.
1940. *Archaeocyathus atlanticus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4, pp. 76-78, pl. 1, figs. 1-3, 5.  
Lower Cambrian: Forteau Formation, L'Anse au Loup on the north shore of the Straits of Belle Isle, Labrador, Canada.  
Holotype: 369, Geological Survey of Canada, Ottawa, Canada.
1940. *Archaeocyathus atlanticus*  
Chi, Bull. Geol. Soc. China, **20**, no. 2, p. 129.
1943. *Archaeocyathus atlanticus*  
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 68-70, pl. 5, figs. 1, 2; pl. 18, c.  
Lower Cambrian: Forteau Formation, L'Anse au Loup, Straits of Belle Isle, Labrador, Canada and Silver Peak region, Nevada.  
Holotype: 369, Geological Survey of Canada, Ottawa, Canada.  
Referred specimen: 14688, U. S. National Museum, Washington, D. C.
1944. *Archeocyathus atlanticus*  
Shimer and Shrock, Index fossils of North America, p. 56, pl. 17, figs. 6, 7.  
Lower Cambrian: Forteau Formation, Labrador, Canada, and Vermont.
1948. *Archaeocyathus atlanticus*  
Okulitch, Jour. Paleo., **22**, p. 344, pl. 54, figs. 1, 2.  
Lower Cambrian: Donald Formation, Holt Creek, Dog-tooth Mountains, British Columbia, Canada.  
Figured specimens: Okulitch Collection, University of British Columbia, Vancouver, Canada.
1950. *Archaeocyathus atlanticus*  
Okulitch, Jour. Paleo., **24**, pp. 393-394.  
Holotype: 369, Geological Survey of Canada, Ottawa, Canada.

1950. *Archaeocyathus atlanticus*  
Little, Canada Geol. Surv., Paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.
1952. *Archaeocyathus atlanticus*  
Moore *et al.*, Invertebrate fossils, figs. 3-11(1a) and (1b).  
Lower Cambrian: Labrador, Canada.
1953. *Archaeocyathus atlanticus*  
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.  
Lower Cambrian: Inyo County, California.
1954. *Archaeocyathus atlanticus*  
Okulitch, Jour. Paleo., **28**, p. 295, pl. 28, fig. 9.  
Lower Cambrian: Inyo County, California.  
Referred specimen: Museum of Paleontology, University of California, Berkeley, California.
1955. *Spirocyathus atlanticus*  
Neaverson, Stratigraphical palaeontology, p. 158.  
Cambrian: Forteau Formation, Western Newfoundland reef, Canada.
1955. *Archaeocyathus atlanticus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 53-54, pl. 3, fig. 1.  
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.  
Referred specimen: 12363, Geological Survey of Canada, Ottawa, Canada.
1955. *Archaeocyathus atlanticus*  
Okulitch, Treatise on Invertebrate Paleontology, Part E, Archaeocyatha, p. E14, figs. 11, 10a and 11, 10b.  
Lower Cambrian: North America.
1958. *Archaeocyathus atlanticus*  
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617-618, 619, 621.  
Lower Cambrian: Old Dominion Limestone, Colville, Washington.  
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1959. *Archaeocyathus atlanticus*

Greggs, Jour. Paleo., **33**, p. 67, pl. 12, figs. 7-9; pl. 14, fig. 11.

Lower Cambrian: Laib Group, south fork of Salmo River, British Columbia, Canada and about 1 mile north of Colville, Washington.

Referred specimens: CL 20c-3, CL 20e-2, CL 20c-2, SB-7, Paleontology Collection, University of British Columbia, Vancouver [and Geological Survey of Canada nos. 14315 and 14322, Ottawa, Canada].

1960. *Archaeocyathus atlanticus*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 297.

Lower Cambrian: North America.

1962. *Archaeocyathus atlanticus*

Vologdin, Osnovy paleontologii, p. 133.

Lower Cambrian: Labrador, Canada.

1964. *Archaeocyathus atlanticus*

Hill, Trans. Royal Soc., New Zealand (Geol.), **2**, no. 9, p. 143.

1965. *Archaeocyathus atlanticus*

Hill, Trans-Antarctic Expedition 1955-1958, Scient. Rept. no. 10, p. 122, fig. 23.1.

Lower Cambrian: Labrador, Canada.

Holotype: 369, Geological Survey of Canada, Ottawa, Canada.

*Archaeocyathus* cf. *atlanticus*, Billings, 1861

1932. *Spirocyathus* cf. *atlanticus*

Poulsen, Mus. Min. Geol. Univ. Copenh., Comm. Paleo., no. 44, p. 26, pl. 5, figs. 1-2; pl. 6, fig. 1.

Lower Cambrian: Ella Island Formation, south coast of Ella Island, Greenland.

1947. *Archaeocyathus* cf. *atlanticus*

Okulitch and Roots, Trans. Royal Soc. Canada, ser. 3, **41**, sec. 4, pp. 41-42, pl. 1, fig. 6.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.

Referred specimen: 12765, Geological Survey of Canada, Ottawa, Canada.

1956. *Archaeocyathus* cf. *atlanticus*

Poulsen, 20 Int. Geol. Congress, El Sistema Cambrico, p. 65.  
Lower Cambrian: Mt. Bastion on Ella Island, East Greenland.

1957. *Archaeocyathus* cf. *A. atlanticus*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 922-923, pl. 111, figs. 6, 7.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake area, Yukon, Canada.

Referred specimen: 13339, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus* cf. *atlanticus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 620.

Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

1962. *Spirocyathus* cf. *atlanticus*

Orlowski, Polska Akad. Nauk, p. 114.

Lower Cambrian: Ella Island, Eastern Greenland.

*Archaeocyathus* (*Archaeocyathellus*) *atreus* Walcott, 1917

See: *Incertae sedis*

*Archaeocyathus* (*Archaeocyathellus*) *dewighti* Walcott, 1889

See: *Archaeocyathellus dewighti* (Walcott)

*Archaeocyathus* (*Archaeocyathellus*) *rarus* (Ford)

See: *Archaeocyathellus rarus* (Ford)

*Archaeocyathus* (*Archaeocyathellus*) *rensselaericus* Ford, 1873

See: *Archaeocyathellus walcotti* Okulitch, 1943

*Archaeocyathus atreus* Walcott, 1917

See: *Incertae sedis*

*Archaeocyathus billingsi* Walcott, 1886

See: *Archaeosycon billingsi* (Walcott)

*Archaeocyathus borealis* Okulitch, 19551955. *Archaeocyathus borealis*

Okulitch, Proc. Royal Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).

Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Archaeocyathus borealis*

Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, pp. 55-57, pl. 2, fig. 1.

Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

Holotype: 12355, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus borealis*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 621.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

1959. *Archaeocyathus borealis*

Greggs, Jour. Paleo., **33**, pp. 67-68, pl. 12, fig. 6; pl. 13, fig. 4.

Lower Cambrian: about 1 mile north of Colville, Washington, and McDame area, British Columbia, Canada.

Referred specimens: CL 20f-2, CL 3a-2, Paleontology Collection, University of British Columbia, Vancouver (and 14321, Geological Survey of Canada, Ottawa, Canada).

*Archaeocyathus constrictus* (Raymond)1931. *Spirocyathus constrictus*

Raymond, Bull. Mus. Comp. Zool., **55**, no. 6, p. 177, pl. 2, fig. 3.

Lower Cambrian at Silver Peak, Nevada.

Holotype: 9,299; other specimen 9,313, Museum Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1935. *Spirocyathus constrictus*  
Okulitch, Trans. Royal Soc. Canada, ser. 3, **29**, sec. 4,  
p. 100.  
Lower Cambrian: Nevada.
1943. *Archaeocyathus constrictus*  
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 70, pl. 6,  
figs. 1, 2.  
Lower Cambrian at Silver Peak, Nevada.  
Holotype: 9299; paratype: 9313, Museum of Comparative  
Zoology, Harvard University, Cambridge, Massachusetts.
1960. *Archaeocyathus constrictus*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 298.  
Lower Cambrian: North America.

*Archaeocyathus Dwighti* Walcott, 1889 [1890]

See: *Archaeocyathellus dwighti* (Walcott)

*Archaeocyathus gracilis* (Meek)

See: *Ethmophyllum whitneyi* Meek, 1865

*Archaeocyathus latus* (Vologdin)

1955. *Archaeocyathus* cf. *latus*  
Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4,  
p. 54, pl. 3, fig. 3.  
Lower Cambrian: Atan Group, McDame area, British Co-  
lumbia, Canada.  
Referred specimen: 12364, Geological Survey of Canada,  
Ottawa, Canada.
1958. *Archaeocyathus* cf. *latus*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.  
Lower Cambrian: Atan Group, McDame Creek, British  
Columbia, Canada.

*Archaeocyathus loculiformis* Okulitch, 1955

1955. *Archaeocyathus loculiformis*  
Okulitch, Proc. Royal Soc. Canada, ser. 3, **49**, sec. 4,  
app. C, p. 41 (abstr.).  
Lower Cambrian: Atan Group, McDame area, Northern  
British Columbia, Canada.

1955. *Archaeocyathus oculiformis*

Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, pp. 54-55, pl. 2, fig. 3.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Holotype: 12354, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus oculiformis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

*Archaeocyathus nevadensis* Okulitch, 1935

See: *Ajaciccyathus nevadensis* (Okulitch)

*Archaeocyathus pavonoides* Matthew, 1886

See: *Matthewcyathus pavonoides* (Matthew)

*Archaeocyathus profundus* Billings, 1865

See: *Pycnoidocyathus profundus* (Billings)

*Pycnoidocyathus loupensis* (Okulitch)

*Archaeocyathus rarum* (Ford)

See: *Archaeocyathellus rarus* (Ford)

*Archaeocyathus rarus* (Ford)

See: *Archaeocyathellus rarus* (Ford)

*Archaeocyathus rensselaericus* Ford, 1873

See: *Archaeocyathellus rensselaericus* (Ford)

*Archaeocyathus septaporus* Okulitch, 1935

See: *Nevadacyathus septaporus* (Okulitch)

*Archaeocyathus (Spirocyathus) yavorskii* (Vologdin)

See: *Archaeocyathus yavorskii* (Vologdin)

*Archaeocyathus taeniatus* Okulitch, 19481948. *Archaeocyathus taeniatus*

Okulitch, Jour. Paleo., **22**, pp. 344-345, pl. 54, fig. 8.

Lower Cambrian: Donald Formation, south side of Holt Creek, Dogtooth Mountains, British Columbia, Canada.  
Holotype: Okulitch Collection, University of British Columbia, Vancouver, Canada.

1958. *Archaeocyathus taeniatius*

Okulitch and Greggs, Jour. Paleo., **32**, p. 619.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

*Archaeocyathus Whitneyi* (Meek)

See: *Ethmophyllum whitneyi* Meek, 1868

*Archaeocyathus yavorskii* (Vologdin)

1952. *Archaeocyathus yavorskii*

Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 31-33, pl. 10.

Lower Cambrian: pleospongian reef, west of Caborca, Sonora, Mexico.

Referred specimen: 111824, U. S. National Museum, Washington, D. C.

1953. *Archaeocyathus yavorskii*

Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.

Lower Cambrian: Inyo County, California.

1954. *Archaeocyathus yavorskii*

Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, pp. 61-62, pl. 12.

Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.

Referred specimen: 111824, U. S. National Museum, Washington, D. C.

1954. *Archaeocyathus (Spirocyathus) yavorskii*

Okulitch, Jour. Paleo., **28**, p. 295, pl. 28, fig. 8.

Lower Cambrian: Inyo County, California.

Referred specimens: Museum of Paleontology, University of California, Berkeley, California.

1956. *Archaeocyathus yavorskii*

Okulitch, 20th Int. Geol. Congress, Mexico, Geol. Paleont. region Caborca nor-pon. Sornora, part 1, pp. 61-62, pl. 12.



Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.

Referred specimen: 111824, U. S. National Museum, Washington, D. C.

*Archaeocyathus* sp.

1845. *Cyathophyllum*

Bayfield, Quart. Jour. Geol. Soc. London, 1, p. 457.

Lower Cambrian: red and white limestone on eastern point of Forteau Bay, Labrador, Canada.

1891. *Archaeocyathus* und. sp.

Walcott, U. S. Geol. Survey Bull. 81, p. 319.

Cambrian: Silver Peak, Nevada.

1895. *Archaeocyathus* sp.

Walcott, Am. Jour. Sci., ser. 3, 49, p. 143.

Lower Cambrian: Inyo County, California.

1902. *Archaeocyathus* sp.

Frech, Lethaea palaeozoica, p. 683.

Cambrian: California and Nevada.

1906. *Archaeocyathus* undet.

Spurr, U. S. Geol. Surv., Prof. Paper 55, p. 17.

Lower Cambrian: Silver Peak Quadrangle, Nevada.

1908. *Archaeocyathus* sp.

Walcott, Smithsonian Misc. Coll., 53, no. 5, pp. 187, 188, 189.

Lower Cambrian: Silver Peak, Esmeralda County, Nevada.

1910. *Archaeocyathus?* sp.

Walcott, Smithsonian Misc. Coll., 53, no. 6, pp. 300, 315, 323.

Lower Cambrian: Silver Spring Quadrangle, Esmeralda County, Nevada, and in Owens Valley, Inyo County, California.

1910. *Archaeocyathus* sp.

Walcott, Outlines of geologic history, pp. 31, 32.

Lower Cambrian: Silver Peak, Nevada.

1912. *Archaeocyathus* sp.

Walcott, U. S. Geol. Surv. Monogr. 51, p. 584.

Lower Cambrian: Silver Peak, Nevada.

1912. *Archaeocyathus* sp.  
Willis, U. S. Geol. Survey, Prof. Paper 71, pp. 100, 101.  
Lower Cambrian: Olenellus zone at Silver Peak in western Nevada.
1918. *Archaeocyathus* sp.  
Kirk, U. S. Geol. Survey, Prof. Paper 110, pp. 30, 31.  
Lower Cambrian: Inyo Range, California.
1932. *Archaeocyathus* sp.  
Mertie, U. S. Geol. Survey Bull. 836-E, pp. 398, 401.  
Lower Cambrian: Tatonduk-Nation district, east central, Alaska.
1934. *Archaeocyathus* sp.  
Resser, Smithsonian Misc. Coll., **92**, no. 10, p. 7.  
Lower Cambrian: town of Colville, Washington.
1937. *Archaeocyathus* sp.  
Mertie, U. S. Geol. Survey Bull. 872, p. 79.  
Middle Cambrian: North of Yukon River, near international boundary, Alaska.
1940. *Archaeocyathus* sp.  
Butts, Va. Geol. Survey Bull. 52, pp. 47, 55, 56, 473.  
Cambrian: Shady Dolomite, Appalachian Valley.
1947. *Archaeocyathus* sp.  
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, **41**, app. C, p. 192.  
Lower Cambrian: Aiken Lake area, British Columbia, Canada.
1947. *Archeocyathus* sp.  
Campbell, Bull. Geol. Soc. Am., **58**, p. 60.  
Lower Cambrian: "undifferentiated argillite" one mile north Colville, Stevens County, Washington.
1953. *Archaeocyathus* sp.  
Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.  
Lower Cambrian: Inyo County, California.
1956. *Archaeocyathus* sp.  
Okulitch, 20th Int. Geol. Congress, El Sistema Cambrico, p. 725.  
Lower Cambrian: Yukon River, Alaska.

1957. *Archaeocyathus* sp.

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 923, pl. 111, fig. 8.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake area, Yukon, Canada.

Referred specimen: 13340, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeocyathus* sp.

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Archaeocyathus* sp.

See: *Metethmophyllum resseri* Okulitch, 1943

*Archaeocyathus arborensis* Okulitch, 1954

*Incertae sedis*

## ARCHAEOFUNGIA Taylor, 1910

*Archaeofungia obliqua* Okulitch, 19551955. *Archaeofungia obliqua*

Okulitch, Proc. Royal Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).

Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Archaeofungia obliqua*

Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, p. 59, pl. 1, figs. 6, 7.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Holotype: 12353, Geological Survey of Canada, Ottawa, Canada.

1958. *Archaeofungia obliqua*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

*Archaeofungia* sp.

1955. *Archaeofungia* sp.

Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, p. 48.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1958. *Archaeofungia* sp.

Okulitch and Greggs, Jour. Paleo., **32**, pp. 620, 621.

Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

*ARCHAEOPHARETRA* Bedford and Bedford, 1936*Archaeopharetra typica* Bedford and Bedford, 1936

1958. *Archaeopharetra typica*

Okulitch and Greggs, Jour. Paleo., **32**, p. 617.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Archaeopharetra typica*

Greggs, Jour. Paleo., **33**, p. 68, pl. 11, figs. 2-5.

Lower Cambrian: about 1 mile north of Colville, Washington and Salmo River, British Columbia, Canada.

Referred specimens: CL2d-1, CO18a-1, CL3b-2, CL2b-1, from Paleontology Collection, University of British Columbia, Vancouver [and 14319 and 14325, Geological Survey of Canada, Ottawa], Canada.

*Archaeopharetra* sp.

1953. *Archaeopharetra* sp.

Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.

Lower Cambrian: Inyo County, California.

1954. *Archaeopharetra* sp.

Okulitch, Jour. Paleo., **28**, p. 293, pl. 28, fig. 3.

Lower Cambrian: Inyo County, California.

Referred specimen: Museum of Paleontology, University of California, Berkeley, California.

1955. *Archaeopharetra* sp.  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4,  
p. 57.  
Lower Cambrian: Atan Group, McDame area, British Co-  
lumbia, Canada.  
Referred specimen: 12372, Geological Survey of Canada,  
Ottawa, Canada.
1958. *Archaeopharetra* sp.  
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.  
Lower Cambrian: Atan Group, McDame Creek, British  
Columbia, Canada.

ARCHAEOSYCON Taylor, 1910

*Archaeosycon billingsi* (Walcott)

1886. *Archaeocyathus Billingsi*  
Walcott, U. S. Geol. Survey Bull. 30, pp. 29, 45, 51, 73, 74,  
pl. 3, figs. 3, 3a-c.  
Middle Cambrian: L'Anse au Loup, Straits of Belle Isle,  
Labrador, Canada.
1889. *Archaeocyathus billingsi*  
Lesley, A dictionary of the fossils of Pennsylvania, **1**, pp. 30-  
31, figs. 3, 3a on p. 30.  
Cambrian: [Lesley's Braintree Formation].
1889. *Coscinocyathus Billingsi*  
Walcott, Am. Jour. Sci., **37**, p. 388.
1889. *Coscinocyathus Billingsi*  
Hinde, Quart. Jour. Geol. Soc. London, **45**, p. 135.  
Lower Cambrian: L'Anse au Loup, Labrador, Canada.
1889. *Archaeocyathus billingsi*  
Miller, North American geology and palaeontology, p. 154.  
Cambrian: [Upper Taconic of Miller].
- 1889 [1890]. *Coscinocyathus billingsi*  
Walcott, Proc. U. S. Nat. Mus., **12**, p. 34.  
Middle Cambrian: L'Anse au Loup, Straits of Belle Isle,  
Labrador, Canada.  
Type: 15302, National Museum, Washington, D. C.

1890. *Coscinocyathus billingsi*  
Walcott, 10th Ann. Rept., Geol. Survey, p. 600, pl. 51,  
figs. 2, 2a-b.  
Types: 15302, National Museum, Washington, D. C.
1890. *Archaeocyathus billingsi*  
Ulrich, Ill. Geol. Surv., 8, p. 240.
1891. *Archaeocyathus Billingsi*  
Bornemann, Nova Acta der Ksl. Leop.—Carol. Deutschen  
Akad. der Naturforscher, Bd. 56, no. 3, pp. 495-499.
1895. *Archaeocyathus Billingsi*  
Head, Palaeozoic sponges of North America, p. 7.
1910. *Archaeosycon Billingsi*  
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 64, 111.  
Cambrian: North America.
1935. *Archaeosycon billingsi*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, 29, sec. 4,  
p. 100.  
Lower Cambrian: Labrador, Canada.
1937. *Archaeocyathus billingsi*  
Ting, Neus. Jahrb. Mineral., 78, p. 330.
1939. *Dictyocyathus (Archaeosycon) billingsi*  
Simon, Abhandl. Senck. nat. Ges., 448, p. 45.
1939. *Archaeocyathus billingsi*  
Simon, Abhandl. Senck. nat. Ges., 448, p. 45.
1939. *Archaeosycon billingsi*  
Simon, Abhandl. Senck. nat. Ges., 448, p. 22.
1943. *Archaeosycon billingsi*  
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 81-82, pl. 14,  
figs. 2-4.  
Lower Cambrian: Forteau Formation, L'Anse au Loup,  
Labrador, Canada.  
Holotype: 15302, U. S. National Museum, Washington,  
D. C.
1955. *Archaeosycon billingsi*  
Okulitch, Treatise on Invertebrate Paleontology, Part E,  
Archaeocyatha, pp. E16-E17, figs. 12, 7.

Lower Cambrian: North America.

1960. *Archaeosycon billingsi*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 309, 311.  
Lower Cambrian: North America.

1962. *Archaeosycon billingsi*

Vologdin, Osnovy paleontologii, p. 134, pl. 7, figs. 6, 7.  
Lower Cambrian: North America.

1965. *Archaeosycon billingsi*

Hill, Trans-Antarctic Expedition 1955-1958, Sci. Rept.  
no. 10, p. 130, figs. 24.1a, b.

Lower Cambrian: Labrador, Canada.

Holotype: 15302, U. S. National Museum, Washington,  
D. C.

*Archaeosycon evansi* Okulitch, 1948

1948. *Archaeosycon evansi*

Okulitch, Jour. Paleo., **22**, p. 347, pl. 54, fig. 9; pl. 55, fig. 1.  
Lower Cambrian: Donald Formation, Holt Creek, Dog-  
tooth Mountains, British Columbia, Canada.

Holotype: 1a, Okulitch Collection, University of British  
Columbia, Vancouver, Canada.

1958. *Archaeosycon evansi*

Okulitch and Greggs, Jour. Paleo., **32**, p. 619.

Lower Cambrian: Donald Formation, Dogtooth Range,  
British Columbia, Canada.

*Archaeosycon vesiculosum* Okulitch, 1943

1943. *Archaeosycon vesiculosum*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 82-83, pl. 15,  
figs. 1, 2.

Lower Cambrian: Forteau Formation, Point Amour, Lab-  
rador, Canada.

Holotype: 17046, Peabody Museum, Yale University, New  
Haven, Connecticut.

Two thin sections of holotype: 25640 (65 A, B), Royal On-  
tario Museum, Toronto, Canada.

1960. *Archaeosycon vesiculosum*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 309, 311.  
Lower Cambrian: North America.

*Archaeosycon* sp.1955. *Archaeosycon* sp.Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 49.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1958. *Archaeosycon* sp.Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

1959. *Archaeosycon* sp.Greggs, Jour. Paleo., **33**, p. 71, pl. 11, fig. 10.

Lower Cambrian: Colville, Stevens County, Washington.

Referred specimen: CL1a-2, Paleontology Collection, University of British Columbia, Vancouver, British Columbia Canada.

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*Archeocyathus Atlanticus* Billings, 1861See: *Archaeocyathus atlanticus*, Billings, 1861*Archeocyathus gracilis* Meek, 1868See: *Ethmophyllum whitneyi* Meek, 1868*Archeocyathus profundus* Billings, 1865See: *Pycnoidocyathus profundus* (Billings)*Archeocyathus rensselaericus* (Ford)See: *Archaeocyathellus rensselaericus* Ford, 1873*Archeocyathus Whitneyi* Meek, 1868See: *Ethmophyllum whitneyi* Meek, 1868*Archeocyathus* sp.See: *Archaeocyathus* sp.*Archoeocyathus? pavonoides* (Matthew)See: *Matthewcyathus pavonoides* (Matthew)*Archoeocyathus profundus* Billings, 1865See: *Pycnoidocyathus loupensis* (Okulitch)



*Archaeocyathus rensseloericus* (Ford)

See: *Archaeocyathellus rensselaericus* Ford, 1873

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*Atikokania irregularis* Walcott, 1912

See: *Incertae sedis*

*Atikokania lawsoni* Walcott, 1912

See: *Incertae sedis*

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*Cambrocyathus amourensis* Okulitch, 1943

See: *Pycnoidocyathus amourensis* (Okulitch)

*Cambrocyathus ceratodictyoides* (Raymond)

See: *Pycnoidocyathus ceratodictyoides* (Raymond)

*Cambrocyathus columbianus* Okulitch, 1943

See: *Pycnoidocyathus columbianus* (Okulitch)

*Cambrocyathus dissepimentalis* Okulitch, 1943

See: *Pycnoidocyathus dissepimentalis* (Okulitch)

*Cambrocyathus donaldi* Okulitch, 1948

See: *Pycnoidocyathus donaldi* (Okulitch)

*Cambrocyathus* cf. *donaldi* Okulitch, 1948

See: *Pycnoidocyathus* cf. *donaldi* (Okulitch)

*Cambrocyathus loupensis* Okulitch, 1940

See: *Pycnoidocyathus loupensis* (Okulitch)

*Cambrocyathus occidentalis* Okulitch, 1943

See: *Pycnoidocyathus occidentalis* (Okulitch)

*Cambrocyathus* cf. *C. occidentalis* Okulitch, 1943

See: *Pycnoidocyathus* cf. *occidentalis* (Okulitch)

*Cambrocyathus orthocornicus* Okulitch, 1943

See: *Pycnoidocyathus orthocornicus* (Okulitch)

*Cambrocyathus profundus* (Billings)

See: *Pycnoidocyathus profundus* (Billings)

*Cambrocyathus septimus* Okulitch, 1948

See: *Pycnoidocyathus septimus* (Okulitch)

*Cambrocyathus* sp.

See: *Pycnoidocyathus* sp.

*CARINACYATHUS* Vologdin, 1932*Carinacyathus perforatus* Kawase and Okulitch, 19571957. *Carinacyathus perforatus*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 922, pl. 111, figs. 1-5.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake area, Yukon, Canada.

Holotype: 13336, other specimens 13337, 13338, Geological Survey of Canada, Ottawa, Canada.

1958. *Carinacyathus perforatus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*CLARUSCYATHUS* Vologdin, 1932*Claruscycathus ketzaensis* Kawase and Okulitch, 19571957. *Claruscycathus ketzaensis*

Kawase and Okulitch, Jour. Paleo., **31**, pp. 928-929, pl. 113, figs. 13-16.

Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.

Holotype: AP-2; other specimens: AP-1, 3, 4, 81, 811, 8, 10 and 11, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Claruscycathus ketzaensis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 622.

Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

*Claruscycathus obliquus* (Okulitch)1948. *Eucyathus obliquus*

Okulitch, Jour. Paleo., **22**, pp. 347-348, pl. 55, figs. 4, 5.

Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.

Holotype: 13 in Okulitch Collection, University of British Columbia, Vancouver, Canada.

1950. *Eucyathus* cf. *obliquus*

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Claruscyathus obliquus*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

*Claruscyathus solidus* Vologdin, 1937

1958. *Claruscyathus solidus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 617.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Claruscyathus solidus*

Greggs, Jour. Paleo., **33**, pp. 71-72, pl. 11, figs. 6, 8, 9, 11, 12.

Lower Cambrian: about 1 mile north of Colville, Washington.

Referred specimens: CL 11b-3, CL 10b-4, CL 9b-6, CL 9b-9, CL 2d-7, Paleontological Collection, University of British Columbia, Vancouver, British Columbia (and 14323, Geological Survey of Canada, Ottawa, Canada).

*COPLEICYATHUS* Bedford and Bedford, 1937

*Copleicyathus laminosis* Okulitch, 1948

See: *Copleicyathus laminosus* Okulitch, 1948

*Copleicyathus laminosus* Okulitch, 1948

1948. *Copleicyathus laminosus*

Okulitch, Jour. Paleo., **22**, p. 345, pl. 55, fig. 6.

Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.

Holotype: 14, Okulitch Collection, University of British Columbia, Vancouver, Canada.

1950. *Copleicyathus laminosis*

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Copleicyathus? laminosus*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

*COSCINOCYATHUS* Bornemann, 1884*Coscinocyathus billingsi* (Walcott)

See: *Archaeosycon billingsi* (Walcott)

*Coscinocyathus cassiarensis* Kawase and Okulitch, 1957

See: *Coscinocyathus cassiariensis* Kawase and Okulitch, 1957

*Coscinocyathus cassiariensis* Kawase and Okulitch, 19571957. *Coscinocyathus cassiariensis*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 917-918, pl. 109, figs. 10-13.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake Area, Yukon, Canada.

Holotype: 13330; other specimens: 13331, 13332, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus cassiarensis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Coscinocyathus dentocanis* Okulitch, 19431943. *Coscinocyathus dentocanis*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 67-68, pl. 4, fig. 2.

Lower Cambrian: Donald Formation, Dogtooth Range, Canyon Creek near Golden, British Columbia, Canada.

Holotype: 108101, U. S. National Museum, Washington, D. C.

Other specimens: 9516, Geological Survey of Canada, Ottawa, Canada.

1948. *Coscinocyathus dentocanis*

Okulitch, Jour. Paleo., **22**, no. 3, pp. 342-343, pl. 53, fig. 5.

Lower Cambrian: Donald Formation, Dogtooth Mountain, Canyon Creek, near Golden, British Columbia, Canada.

Holotype: 9516, Geological Survey of Canada, Ottawa, Canada.

1950. *Coscinocyathus dentocanis*

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1955. *Coscinocyathus dentocanis*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 51-53, pl. 3, figs. 5-7.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Referred specimens: 12359, 12367, 12368 in the Geological Survey of Canada, Ottawa, Canada.

1957. *Coscinocyathus dentocanis*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 916-917, pl. 109, figs. 4-6.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake area, Yukon, Canada.

Referred specimens: 13327, 13328 and collections nos. 24040 and 24041, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus dentocanis*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 620, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1960. *Coscinocyathus dentocanis*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 253.  
Lower Cambrian: North America.

*Coscinocyathus inequivallus* Kawase and Okulitch, 1957

1957. *Coscinocyathus inequivallus*  
Kawase and Okulitch, Jour. Paleo., **31**, pp. 918-920, pl. 110, figs. 1-6.  
Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.  
Holotype: AP-14; other specimens: AP-13, 15, 16, 19, and 21, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Coscinocyathus inequivallus*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.  
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

*Coscinocyathus* cf. *miniporosus* Bedford and Bedford, 1937

1950. *Coscinocyathus* cf. *miniporosus*  
Little, Canada Geol. Surv., Paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.
1958. *Coscinocyathus* cf. *miniporosus*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 618.  
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

*Coscinocyathus multiporosus* Kawase and Okulitch, 1957

See: *Coscinocyathus multiporus* Kawase and Okulitch, 1957

*Coscinocyathus multiporus* Kawase and Okulitch, 1957

1957. *Coscinocyathus multiporus*  
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 917, pl. 109, figs. 7-9.  
Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake area, Yukon, Canada.

Holotype: 13329, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus multiporosus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Coscinocyathus rhyacoensis* Okulitch, 1948

1948. *Coscinocyathus rhyacoensis*

Okulitch, Jour. Paleo., **22**, p. 343, pl. 53, figs. 7, 8.

Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Mountains, British Columbia, Canada.

Holotype: 7, Okulitch Collection, University of British Columbia, Vancouver, Canada.

1958. *Coscinocyathus rhyacoensis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 619.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

*Coscinocyathus serratus* Kawase and Okulitch, 1957

1957. *Coscinocyathus serratus*

Kawase and Okulitch, Jour. Paleo., **31**, p. 920, pl. 110, figs. 7, 9.

Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.

Holotype: AP-17, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Coscinocyathus serratus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 622.

Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

*Coscinocyathus tubicornis* Kawase and Okulitch, 1957

See: *Coscinocyathus tubicornus* Kawase and Okulitch, 1957

*Coscinocyathus tubicornus* Kawase and Okulitch, 1957

1957. *Coscinocyathus tubicornus*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, p. 921, pl. 110, figs. 10, 11.

Lower Cambrian: 1 mile due NE of northeast end Crescent Lake, lat. 60°12'30", long. 131°11'30", Wolf Lake area, Yukon, Canada.

Holotype: 13334; other specimen 24036, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus tubicornis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Coscinocyathus veronicus* Kawase and Okulitch, 1957

1957. *Coscinocyathus veronicus*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 920-921, pl. 110, fig. 8.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake area, Yukon, Canada.

Holotype: 13333; other specimens: collection nos. 24040 and 24041, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus veronicus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Coscinocyathus* sp.

1895. *Coscinocyathus* sp.

Walcott, Am. Jour. Sci., ser. 3, **49**, p. 143.

Lower Cambrian: Inyo County, California.

1902. *Coscinocyathus* sp.

Frech, Lethaea palaeozoica, p. 683.

Cambrian: California and Nevada.

1912. *Coscinocyathus* sp.

Willis, U. S. Geol. Surv., Prof. Paper 71, p. 100.

Lower Cambrian: Olenellus zone at Silver Peak, in western Nevada.

1943. *Coscinocyathus* sp.

Okulitch, Geol. Soc. Am., Special Papers, 48, p. 67, pl. 4, figs. 5-7.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Shady Formation, Georgia and Virginia.

Referred specimens: 108125, 108107, U. S. National Museum, Washington, D. C., and 9517, Geological Survey of Canada, Ottawa, Canada.



1947. *Coscinocyathus* sp.  
Okulitch and Roots, Proc. Roy. Soc. Canada, **41**, ser. 3, app. C, p. 192.  
Lower Cambrian: Aiken Lake area, British Columbia, Canada.
1947. *Coscinocyathus* sp.  
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, p. 41, pl. 1, fig. 11.  
Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.  
Referred specimen: 12764 in the collection of the Geological Survey of Canada, Ottawa, Canada.
1948. *Coscinocyathus* sp.  
Okulitch, Jour. Paleo., **22**, no. 3, p. 343, pl. 53, fig. 6.  
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.  
Figured specimen: 9517, Geological Survey of Canada, Ottawa, Canada.
1950. *Coscinocyathus* sp.  
Little, Canada Geol. Surv., Paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.
1952. *Coscinocyathus* sp.  
Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 31, pl. 9, figs. 1A, 2.  
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.  
Referred specimen: 111820, U. S. National Museum, Washington, D. C.
1954. *Coscinocyathus* sp.  
Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, p. 60, pl. 11, figs. 1A, 2.  
Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.  
Referred specimen: 111820, U. S. National Museum, Washington, D. C.
1955. *Coscinocyathus* sp.  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 53.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1956. *Coscinocyathus* sp.

Okulitch, 20th Int. Geol. Congress Mexico, geologia y paleont. region Caborca nor-pon. Sonora, pt. 1, p. 60, pl. 11, figs. 1A, 2.

Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico. Referred specimen: 111820, U. S. National Museum, Washington, D. C.

1957. *Coscinocyathus* sp.

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 921-922, pl. 110, fig. 12.

Lower Cambrian: 1 mile due NE of northeast end of Crescent Lake, lat.  $60^{\circ}12'30''$ , long.  $131^{\circ}11'30''$ , Wolf Lake area, British Columbia, Canada.

Referred specimen: 13335, Geological Survey of Canada, Ottawa, Canada.

1958. *Coscinocyathus* sp.

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619, 620, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1960. *Coscinocyathus*

Clark and Stearn, The Geological Evolution of North America, fig. 15-10.

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*Coscinoptycha* sp.

See: *Coscinoptycta* Broili, 1915

*COSCINOPTYCTA* Broili, 1915*Coscinoptycta* sp.

1956. *Coscinoptycta* sp.

Okulitch, 20th Int. Geol. Congress, El Sistema Cambrico, p. 725.

Lower Cambrian: Yukon River, Alaska.

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*Cyathophyllum* sp.

See: *Archaeocyathus* sp.

*DENDROCYATHUS* Okulitch and Roots, 1947*Dendrocyathus inexpectans* Okulitch and Roots, 1947

See: *Dendrocyathus unexpectans* Okulitch and Roots, 1947

*Dendrocyathus unexpectans* Okulitch and Roots, 1947

1947. *Dendrocyathus inexpectans*

Okulitch and Roots, Proc. Roy. Soc. Canada, **41**, ser. 3, app. C, p. 192.

Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Dendrocyathus unexpectans*

Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 44-45, pl. 1, figs. 10, 13.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.

Holotype: 12769 in the collection of Geological Survey of Canada, Ottawa, Canada.

1955. *Dendrocyathus unexpectans*

Okulitch, Treatise on Invertebrate Paleontology, Pt. E, Archaeocyatha, p. E16, fig. 11, 1.

Lower Cambrian: British Columbia, Canada.

1958. *Dendrocyathus unexpectans*

Okulitch and Greggs, Jour. Paleo., **32**, p. 620.

Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

*Dendrocyathus* sp.

- 1958.
- Dendrocyathus*
- sp.

Okulitch and Greggs, Jour. Paleo, **32**, p. 617.

Lower Cambrian: Old Dominion Limestone, Colville, Wash.

- 1959.
- Dendrocyathus*
- sp.

Greggs, Jour. Paleo., **33**, p. 71.

Lower Cambrian: Colville, Stevens County, Washington.

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*Dictyocyathus* (*Archaeosycon*) *billingsi* (Walcott)See: *Archaeosycon billingsi* (Walcott)

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*Erimophyllum profundum* (Billings)See: *Pycnoidocyathus profundus* (Billings)*ETHMOCOSCINUS* Simon, 1939*Ethmocoscinus* sp.

- 1957.
- Ethmocoscinus*
- (?) sp.

Kawase and Okulitch, Jour. Paleo., **31**, p. 916, pl. 109, fig. 3.

Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.

Referred specimen: AP7, Department of Geology, University of British Columbia, Vancouver, Canada.

- 1958.
- Ethmocoscinus*
- (?) sp.

Okulitch and Greggs, Jour. Paleo., **32**, p. 622.

Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

*ETHMOPHYLLUM* Meek, 1868*Ethmophyllum americanum* Okulitch, 1952

- 1950.
- Ethmophyllum americanum*

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

- 1952.
- Ethmophyllum americanum*

Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 30-31, pl. 7, figs. 3, 4.

Lower Cambrian: West end of the Proveedora Hills, Sonora, Mexico.

Holotype: 111816, U. S. National Museum, Washington, D. C.

1954. *Ethmophyllum americanum*

Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, pp. 59–60, pl. 9, figs. 3, 4.

Lower Cambrian: West end of the Proveedora Hills, Sonora, Mexico.

Holotype: 111816, U. S. National Museum, Washington, D. C.

1956. *Ethmophyllum americanum*

Okulitch, 20th Int. Geol. Congress, Mexico Geol. paleont., region Caborca norponiente Sonora, pt. 1, pp. 59–60, pl. 9, figs. 3, 4.

Lower Cambrian: West end of the Proveedora Hills, Sonora, Mexico.

Holotype: 111816, U. S. National Museum, Washington, D. C.

1958. *Ethmophyllum americanum*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

1959. *Ethmophyllum americanum*

Greggs, Jour. Paleo., **33**, p. 66, pl. 13, fig. 11; pl. 14, figs. 5, 12.

Lower Cambrian: about 1 mile north of Colville, Washington, and Laib Group, south fork of Salmo River, British Columbia, Canada.

Referred specimens: CL 20e-9, SC-7, in the Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada (and 14316, 14322 in Geological Survey of Canada, Ottawa, Canada).

*Ethmophyllum* cf. *americanum* Okulitch, 1952

1959. *Ethmophyllum* sp. cf. *E. americanum*

Greggs, Jour. Paleo., **33**, p. 66, pl. 14, figs. 9, 12.

Lower Cambrian: Laib Group, south fork of Salmo River, British Columbia, Canada.

Referred specimens: SC-12; SK-3 in the Paleontology Collection, University of British Columbia, Vancouver (and 14316 in the Geological Survey of Canada, Ottawa, Canada).

*Ethmophyllum ceratodictoides* Raymond, 1931

See: *Pycnoidocyathus ceratodictyoides* (Raymond)

*Ethmophyllum ceratodictyoides* Raymond, 1931

See: *Pycnoidocyathus ceratodictyoides* (Raymond)

*Ethmophyllum cooperi* Okulitch, 1952

1952. *Ethmophyllum cooperi*

Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 29-30, pl. 7, figs. 1, 2; pl. 9, fig. 4.

Lower Cambrian: pleospongian reef, west of Caborca, Sonora, Mexico.

Holotype: 111814; other specimen 111814a, U. S. National Museum, Washington, D. C.

1954. *Ethmophyllum cooperi*

Okulitch, Univ. Nac. Autonoma, Mexico, Bull. 58, pp. 58-59, pl. 9, figs. 1, 2; pl. 11, fig. 4.

Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.

Holotype: 111814; other specimen 111814a in U. S. National Museum, Washington, D. C.

1956. *Ethmophyllum cooperi*

Okulitch, 20th Int. Geol. Congress, Mexico, Geol. paleont., region de Caborca norponiente de Sonora, pt. 1, pp. 58-59, pl. 9, figs. 1, 2; pl. 11, fig. 4.

Lower Cambrian: archaeocyathid reef, west of Caborca, Sonora, Mexico.

Holotype: 111814; other specimen 111814a in U. S. National Museum, Washington, D. C.

See also: *Ethmophyllum whitneyi* Meek, 1868

*Ethmophyllum gracile* Meek, 1868

See: *Ethmophyllum whitneyi* Meek, 1868

*Ethmophyllum gracilis* Meek, 1868

See: *Ethmophyllum whitneyi* Meek, 1868

*Ethmophyllum labradorensis* Okulitch, 1935

See: *Metethmophyllum labradorensis* (Okulitch)

*Ethmophyllum lineatus* Greggs, 1959

1958. *Ethmophyllum lineatus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 618.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

1959. *Ethmophyllum lineatus*

Greggs, Jour. Paleo., **33**, pp. 66-67, pl. 14, figs. 2-4.

Lower Cambrian: Laib Group, south fork of Salmo River, British Columbia, Canada.

Holotype: SB-14, Paleontology Collection, University of British Columbia, Vancouver, Canada, and 14315, Geological Survey of Canada, Ottawa, Canada.

Other specimens: SC-9 and SE-1, University of British Columbia, Vancouver, and 14316, Geological Survey of Canada, Ottawa, Canada.

*Ethmophyllum meeki* Walcott, 1891

See: *Metethmophyllum meeki* (Walcott)

*Ethmophyllum profundum* (Billings)

See: *Pycnoidocyathus profundus* (Billings)

*Ethmophyllum profundus* (Billings)

See: *Pycnoidocyathus profundus* (Billings)

*Ethmophyllum rarum* (Ford)

See: *Archaeocyathellus rarus* (Ford)

*Ethmophyllum* cf. *ratam* Vologdin, 1940

See: *Ethmophyllum* cf. *ratum* Vologdin, 1940

*Ethmophyllum* cf. *ratum* Vologdin, 1940

1955. *Ethmophyllum* cf. *ratum*

Okulitch, Trans. Royal Soc. Canada, ser. 3, **49**, sec. 4, p. 50, pl. 3, figs. 8, 9.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Referred specimens: 12370, 12371, Geological Survey of Canada, Ottawa, Canada.

1958. *Ethmophyllum* cf. *ratam*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

*Ethmophyllum rensselaericum* (Ford)

See: *Archaeocyathellus rensselaericus* Ford, 1873

*Ethmophyllum whitnei* Meek, 1868

See: *Ethmophyllum whitneyi* Meek, 1868

*Ethmophyllum whitneyi* Meek, 1868

1868. *Ethmophyllum* *Whitneyi*

Meek, Am. Jour. Sci. Arts, ser. 2, **45**, pp. 62-64.

Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1868. *Ethmophyllum* *gracile*

Meek, Am. Jour. Sci. Arts, ser. 2, **45**, p. 64.

Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1868 [1869]. *Archeocyathus* *Whitneyi*

Meek, Am. Jour. Sci. Arts, ser. 2, **46**, no. 136, p. 144.

Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1868 [1869]. *Archeocyathus* *gracilis*

Meek, Am. Jour. Sci. Arts, ser. 2, **46**, no. 136, p. 144.

Cambrian: [Silurian of Meek] at Silver Peak, Nevada.

1877. *Ethmophyllum* *whitneyi*

Miller, The American palaeozoic fossils, p. 53.

Cambrian: [Upper Silurian of Miller].

1877. *Ethmophyllum* *gracile*

Miller, The American palaeozoic fossils, p. 53.

Cambrian: [Upper Silurian of Miller].

1886. *Ethmophyllum* *whitneyi*

Walcott, U. S. Geol. Surv., Bull. 30, pp. 81-84, pl. 4, figs. 1, 1a-h.

Middle Cambrian: Silver Peak, Western Nevada.



Remarks: Okulitch, 1943, p. 66, states that only pl. 4, figs. 1, 1b and 1c are *E. whitneyi*; figs. 1h, 1d and 1e are *E. meeki*; and 1a, 1f and 1g are of another genus and species.

1887. *Ethmophyllum Whitneyi*  
Walcott, Am. Jour. Sci., ser. 3, **34**, no. 200, art. 18, pp. 145–146.
1888. *Archaeocyathus Whitneyi*  
Hinde, Geol. Mag., ser. 3, **5**, p. 228.
1889. *Ethmophyllum Whitneyi*  
Nicholson and Lydekker. A manual of palaeontology, 3rd ed., pp. 183–184.  
Lower Cambrian: Nevada.
1889. *Ethmophyllum Whitneyi*  
Hinde, Quart. Jour. Geol. Soc. London, **45**, pp. 133–134, pl. 5, fig. 7.  
Cambrian: Nevada.
1889. *Ethmophyllum Whitneyi*  
Walcott, Am. Jour. Sci., **37**, p. 388.
1889. *Ethmophyllum whitneyi*  
Miller, North American geology and palaeontology, p. 160.  
Cambrian: [Upper Taconic of Miller].
1890. *Ethmophyllum whitneyi*  
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 55, figs. 1, 1b and 1c.  
Lower Cambrian: Silver Peak, Western Nevada.  
Types: 15307, National Museum, Washington, D. C.
1890. *Ethmophyllum whitneyi*  
Ulrich, Ill. Geol. Surv., **8**, p. 240.
1891. *Ethmophyllum whitneyi*  
Walcott, U. S. Geol. Surv. Bull. 81, pp. 165, 169, 319.  
Cambrian: Silver Peak, Nevada.
1891. *Archaeocyathus Whitneyi*  
Bornemann, Nova Acta der Ksl. Leop.-Carol. Deutschen Acad. der Naturforscher. Bd. 56, no. 3, pp. 495–499.
1895. *Ethmophyllum Whitneyi*  
Head, Palaeozoic sponges of North America, p. 10.

1895. *Ethmophyllum gracilis*  
Head, Palaeozoic sponges of North America, p. 10.
1895. *Archaeocyathus gracilis*  
Head, Palaeozoic sponges of North America, p. 7.
1895. *Ethmophyllum whitneii*  
Walcott, Am. Jour. Sci., ser. 3, **49**, p. 143.  
Lower Cambrian: Inyo County, California.
1902. *Ethmophyllum Whitneyi*  
Frech, Lethaea palaeozoica, p. 683.  
Cambrian: California and Nevada.
1906. *Ethmophyllum whitneyi*  
Spurr, U. S. Geol. Surv., Prof. Paper 55, p. 17.  
Lower Cambrian: Silver Peak Quadrangle, Nevada.
1908. *Ethmophyllum gracile*  
Walcott, Smithsonian Misc. Coll., **53**, no. 5, p. 187.  
Lower Cambrian: Silver Peak, Esmeralda County, Nevada.
1910. *Ethmophyllum Whitneyi*  
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 64, 61, figs.  
26 (6), 26 (9) and 26 (10).  
Cambrian: Nevada.
1912. *Ethmophyllum whitneyi*  
Willis, U. S. Geol. Surv., Prof. Paper 71, pp. 99, 100, 101.  
Lower Cambrian: Olenellus zone at Silver Peak, in Western  
Nevada.
1918. *Ethmophyllum gracile*  
Kirk, U. S. Geol. Surv., Prof. Paper 110, pp. 30, 31.  
Lower Cambrian: Inyo Range, California.
1935. *Ethmophyllum whitneyi*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4,  
p. 100, pl. 2, fig. 3.  
Lower Cambrian: Nevada.
1935. *Ethmophyllum whitneyi*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4,  
p. 106, pl. 2, fig. 3.  
Lower Cambrian: Silver Peak, Nevada.
1937. *Ethmophyllum whitneyi*  
Ting, Neus. Jahrb. Mineral., **78**, p. 365, text-fig. 8d.

1937. *Ethmophyllum whitneyi*  
Vologdin, Problems of paleontology, pp. 453, 481.  
Cambrian: Nevada.
1937. *Ethmophyllum whitneyi*  
Okulitch, Proc. Geol. Soc. Am., p. 358.
1939. *Ethmophyllum whitneyi*  
Simon, Abhandl. Senck., nat. Ges., 448, p. 29.
1939. *Ethmophyllum whitneyi*  
Bedford and Bedford, Kyancutta Mus. Mem., no. 6, p. 71.
1943. *Ethmophyllum whitneyi*  
Okulitch, Geol. Soc. Am., Spec. Paper 48, pp. 65-67, pl. 3,  
figs. 15a-c; pl. 4, figs. 1, 3, 4, 8.  
Lower Cambrian: Silver Peak district, Nevada.  
Referred specimens: 15307, U. S. National Museum, Wash-  
ington, D. C.
1944. *Ethmophyllum whitneyi*  
Shimer and Shrock, Index fossils of North America, p. 57,  
pl. 17, fig. 19.  
Lower Cambrian: Nevada.
1950. *Ethmophyllum whitneyi*  
Little, Canada Geol. Surv., Paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Colum-  
bia, Canada.
1952. *Ethmophyllum whitneyi*  
Moore *et al.*, Invertebrate fossils, figs. 3-11 (3a) and (3b).  
Lower Cambrian: Nevada.
1952. *Ethmophyllum whitneyi*  
Okulitch, Smithsonian Misc. Coll., 119, pp. 28-29, pl. 8,  
figs. 3-5.  
Lower Cambrian: west end of the Proveedora Hills, Sonora,  
Mexico; and Silver Peak district, Nevada.  
Referred specimens: 111818 a-c, U. S. National Museum,  
Washington, D. C.
1953. *Ethmophyllum whitneyi*  
Okulitch, Bull. Geol. Soc. Am., 64, p. 1521.  
Lower Cambrian: Inyo County, California.

1954. *Ethmophyllum whitneyi*  
Okulitch, Univ. Nac. Autonoma, Mexico Bull. 58, pp. 57-58, pl. 10, figs. 3-5.  
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico; and Silver Peak district, Nevada.  
Referred specimens: 111818 a-c, U. S. National Museum, Washington, D. C.
1954. *Ethmophyllum whitneyi*  
Okulitch, Jour. Paleo., **28**, p. 294.  
Lower Cambrian: Inyo County, California.  
Referred specimens: Museum of Paleontology, University of California, Berkeley, California.
1955. *Ethmophyllum whitneyi*  
Okulitch, Treatise on Invertebrate Paleontology, pt. E Archaeocyatha, p. E12, figs. 9, 2 and 4A.  
Lower Cambrian: Nevada.
1956. *Ethmophyllum whitneyi*  
Okulitch, 20th Int. Geol. Congress Mexico, geol. paleont. region Caborca norponiente Sonora, pt. 1, pp. 57-58, pl. 10, figs. 3-5.  
Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico; and Silver Peak district, Nevada.  
Referred specimens: 111818 a-c, U. S. National Museum, Washington, D. C.
1958. *Ethmophyllum whitneyi*  
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 620.  
Lower Cambrian: Old Dominion Limestone, Colville, Washington.  
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.
1958. *Ethmophyllum whitneyi*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 618.  
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.
1959. *Ethmophyllum whitneyi*  
Greggs, Jour. Paleo., **33**, p. 66, pl. 13, figs. 7, 8; pl. 14, figs. 7, 10.  
Lower Cambrian: about 1 mile north of Colville, Washington; and Laib Group at the South Fork of the Salmo River, British Columbia, Canada.

Referred specimens: CL-10b-6, CL-5a-2, SK-1, SA-10, Paleontology Collection, University of British Columbia, Vancouver, Canada (and 14323 in the Geological Survey of Canada, Ottawa, Canada).

1960. *Ethmophyllum whitneyi*  
Easton, Invertebrate paleontology, p. 119, fig. 3.9 (8).  
Lower Cambrian: U.S.A.
1960. *Ethmophyllum whitneyi*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 163.  
Lower Cambrian: Silver Peak, Nevada.
1962. *Ethmophyllum whitneyi*  
Vologdin, Osnovy paleontologii, pp. 121-122.  
Lower Cambrian: Nevada.
1963. *Ethmophyllum whitneyi*  
McKee, Jour. Paleo., **37**, pp. 287-293, text-figs. 1-4.  
Lower Cambrian: 150 feet above the base of the Poleta Formation, Last Chance Range, California.
1963. *Ethmophyllum cooperi*  
McKee, Jour. Paleo., **37**, pp. 287-293, text-figs. 1-4.  
Lower Cambrian: 150 feet above the base of Poleta Formation, Last Chance Range, California.
1963. *Ajacyathus nevadensis*  
McKee, Jour. Paleo., **37**, pp. 287-293, text-figs. 1-4.  
Lower Cambrian: 150 feet above the base of the Poleta Formation, Last Chance Range, California.
1965. *Ethmophyllum whitneyi*  
Hill, Trans-Antarctic Expedition 1955-1958. Sci. Rept. no. 10, pp. 72-73, text-figs. 16.1a-c; pl. 4, figs. 1a-d.  
Lower Cambrian: Silver Peak, Nevada.  
Type specimens: 15307 in U. S. National Museum, Washington, D. C.

See also: *Incertae sedis*

*Ethmophyllum* cf. *whitneyi* Meek, 1868

1910. *Ethmophyllum* cf. *whitneyi*  
Walcott, Outlines of geologic history, pp. 31, 32.  
Lower Cambrian: Silver Peak, Nevada.

*Ethmophyllum* sp.

1932. *Ethmophyllum* sp.

Mertie, U. S. Geol. Surv. Bull. 836-E, pp. 398, 401.

Lower Cambrian: Tatonduk-Nation district, east central, Alaska.

1935. *Ethmophyllum*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 106, pl. 1, fig. 1.

1937. *Ethmophyllum* sp.

Mertie, U. S. Geol. Surv. Bull. 872, p. 79.

Middle Cambrian: north of Yukon River, near international boundary, Alaska.

1950. *Ethmophyllum* sp.

Little, Canada Geol. Surv., Paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1955. *Ethmophyllum* sp.

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 48.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

1956. *Ethmophyllum* sp.

Okulitch, 20th Int. Geol. Congress, El Sistema, Cambrico, p. 725.

Lower Cambrian: Yukon River, Alaska.

1958. *Ethmophyllum* sp.

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

See also: *Incertae sedis*

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*Ethmophyllum whitneyi* Meek, 1868

See: *Ethmophyllum whitneyi* Meek, 1868

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*Eucyathus obliquus* Okulitch, 1948

See: *Claruscyathus obliquus* (Okulitch)

*EXOXYATHUS* Bedford and Bedford, 1937*Exocyathus canadensis* Okulitch, 19431943. *Exocyathus canadensis*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 83-84, pl. 14, fig. 5; pl. 16, fig. 1; pl. 17, fig. 1.

Lower Cambrian: Forteau Formation, Point Amour and Anse au Loup, Labrador, Canada.

Cotypes: 17048 and 17049, Peabody Museum, Yale University, New Haven, Connecticut, and 25639, 25643 and 25645, Royal Ontario Museum, Toronto, Canada.

1946. *Exocyathus canadensis*

Okulitch, Jour. Paleo., 20, pp. 275-276, pl. 41, fig. 1.

Lower Cambrian: Point Amour, Labrador, Canada.

Referred specimen: 25643, Peabody Museum, Yale University, New Haven, Connecticut. Thin section, 67, Royal Ontario Museum of Paleontology, Toronto, Canada.

*Exocyathus regularis* Okulitch, 19431943. *Exocyathus regularis*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 84, pl. 15, figs. 3, 4.

Lower Cambrian: Point Amour, Labrador, Canada.

Holotype: 17047, Peabody Museum, Yale University, New Haven, Connecticut.

Referred specimens: 25641, Royal Ontario Museum, Toronto, Canada.

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*Haguia sphaerica* Walcott, 1899

See: *Incertae sedis*

*LOCULICYATHUS* Vologdin, 1931*Loculicyathus ellipticus* Kawase and Okulitch, 19571957. *Loculicyathus ellipticus*

Kawase and Okulitch, Jour. Paleo., 31, no. 5, pp. 926-927, pl. 113, figs. 1-6.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake Area, Yukon, Canada.

Holotype: 13347, other specimens: 13348, 13349, Geol. Survey of Canada, Ottawa, Canada.

1958. *Loculiformis ellipticus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

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*Loculiformis ellipticus* Kawase and Okulitch, 1957

See: *Loculicyathus ellipticus* Kawase and Okulitch, 1957

*MATTHEWCYATHUS* Okulitch, 1940

*Matthewcyathus pavonoides* (Matthew)

1886. *Archeocyathus? pavonoides*

Matthew, Trans. Roy. Soc. Canada, **3**, sec. 4, pp. 29-30, pl. 5, figs. 1a-d.

St. John Group; in greyish-grey shale of Div. 1c., Hanford Brook, St. Martin's, Canada.

1889. *Archaeocyathus? pavonoides*

Walcott, Am. Jour. Sci., **38**, p. 35.

1890. *Archaeocyathus? pavonoides*

Ulrich, Ill. Geol. Surv., **8**, p. 240.

1891. *Archaeocyathus? pavonoides*

Walcott, U. S. Geol. Surv. Bull. 81, p. 83.

Cambrian: St. John Group, New Brunswick, Canada.

1892. *Archaeocyathus(?) pavonoides*

Matthew, Nat. Hist. Soc. Bull., no. 10, p. V.

Cambrian: St. John Group, division C, near St. John, New Brunswick, Canada.

1895. *Archaeocyathus pavonoides*

Head, Palaeozoic sponges of North America, p. 7.

1940. *Matthewcyathus pavonoides*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34** (abstr.), p. 159.

1940. *Matthewcyathus pavonoides*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4, pp. 83-86, pl. 3, figs. 4, 5.



Middle Cambrian: division 1c at Hanford Brook, New Brunswick, Canada.

Holotype: 242, in Royal Ontario Museum of Paleontology, Toronto, Ontario, Canada.

1943. *Matthewcyathus pavonoides*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 85–86, pl. 14, fig. 6; pl. 15, fig. 5.

Middle Cambrian: division 1c, Hanford Brook, St. Martin's, New Brunswick, Canada.

Referred specimen: 7872, Royal Ontario Museum, Toronto, Ontario, Canada.

1960. *Matthewcyathus povanoides*

Zhuravleva, Arkheotsiaty, Sibirskoi platformy, p. 303.

1965. *Matthewcyathus pavonoides*

Hill, Trans-Antarctic Expedition 1955–1958, Sci. Rept. no. 10, p. 141.

Middle Cambrian: from division 1c, Hanford Brook, St. Martin's, New Brunswick, Canada.

Holotype: 7872, Royal Ontario Museum of Paleontology, Toronto, Canada.

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*Matthewcyathus povanoides* (Matthew)

See: *Matthewcyathus pavonoides* (Matthew)

*METACOSCINUS* Bedford and Bedford, 1934

*Metacoscinus deasensis* Okulitch, 1955

1955. *Metacoscinus deasensis*

Okulitch, Proc. Roy. Soc. Canada, ser. 3, 49, sec. 4, app. C, p. 41 (abstr.).

Lower Cambrian: Atan Group; McDame area, Northern British Columbia, Canada.

1955. *Metacoscinus deasensis*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, 49, sec. 4, pp. 62–63, pl. 1, figs. 3, 4.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Holotype: 12358, Geological Survey of Canada, Ottawa, Canada.

1958. *Metacoscinus deasensis*Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

*Metacoscinus gabrielensis* Okulitch, 1955See: *Metacoscinus gabrielsensis* Okulitch, 1955*Metacoscinus gabrielsensis* Okulitch, 19551955. *Metacoscinus gabrielsensis*Okulitch, Proc. Roy. Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).

Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Metacoscinus gabrielsensis*Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 61-62, pl. 1, figs. 1, 2, 5.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Holotype: 12357, Geological Survey of Canada, Ottawa, Canada.

1958. *Metacoscinus gabrielensis*Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

*Metacoscinus poolensis* Kawase and Okulitch, 19571957. *Metacoscinus poolensis*Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 927-928, pl. 113, figs. 7-11.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake Area, Yukon, Canada.

Holotype: 13350, other specimens 13351, 13352, Geological Survey of Canada, Ottawa, Canada.

1958. *Metacoscinus poolensis*Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Metacoscinus* sp.

1957. *Metacoscinus* sp.

Kawase and Okulitch, Jour. Paleo., **31**, p. 928, pl. 113, fig. 12.

Lower Cambrian: Pelly Mountains, Quiet Lake area, Yukon, Canada.

Referred specimen: AP-6, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Metacoscinus* sp.

Okulitch and Greggs, Jour. Paleo., **32**, p. 622.

Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

*METETHMOPHYLLUM* Okulitch, 1943*Metethmophyllum labradorensis* (Okulitch)

1935. *Ethmophyllum labradorensis*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, pp. 102-103, pl. 2, fig. 7.

Lower Cambrian: Point Amour and Loup Bay, Labrador, Canada.

Holotype: 9329, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Metethmophyllum labradorensis*

Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 80, pl. 13, fig. 4.

Lower Cambrian: Forteau Formation, Point Amour and Loup Bay, Labrador, Canada.

Holotype: 9329, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1960. *Ethmophyllum labradorensis*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 164.

Lower Cambrian: North America.

*Metethmophyllum meeki* (Walcott)

1886. *Ethmophyllum whitneyi*

Walcott, U. S. Geol. Surv. Bull. 30, pp. 81-84, pl. 4, figs. 1h, 1d and 1e.

Middle Cambrian: Silver Peak, Western Nevada.

1889. *Ethmophyllum Meeki*

Walcott, Am. Jour. Sci., **37**, p. 388.

- 1889 [1890]. *Ethmophyllum meeki*  
Walcott, Proc. U. S. Nat. Mus., **12**, p. 34.  
Lower Cambrian: Olenellus zone, Silver Peak, Nevada.  
Type: 18358, National Museum, Washington, D. C.
1890. *Ethmophyllum meeki*  
Walcott, 10th Ann. Rept., U. S. Geol. Surv., pp. 601-602,  
pl. 55, figs. 2, 2a-c.  
Lower Cambrian: Silver Peak, Nevada.  
Holotype: 18358, National Museum, Washington, D. C.  
Remarks: Okulitch, 1943, p. 79, states that only fig. 2 can  
be regarded unequivocally as *E. meeki*.
1895. *Ethmophyllum Meeki*  
Head, Palaeozoic sponges of North America, p. 10.
1912. *Ethmophyllum meeki*  
Willis, U. S. Geol. Surv., Prof. Paper 71, p. 99.  
Lower Cambrian: Olenellus zone at Silver Peak, in western  
Nevada.
1943. *Metethmophyllum meeki*  
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 79, pl. 13,  
figs. 2, 3.  
Lower Cambrian: Silver Peak, Nevada.  
Cotypes: 18358, U. S. National Museum, Washington, D. C.
1955. *Metethmophyllum meeki*  
Okulitch, Treatise on Invertebrate Paleontology, Part E,  
Archaeocyatha, p. E16, figs. 12, 5.  
Lower Cambrian: North America
1960. *Ethmophyllum meeki*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 164.  
Lower Cambrian: North America
1962. *Metethmophyllum meeki*  
Vologdin, Osnovy paleontologii, p. 122.  
Cambrian: Nevada
1964. *Metethmophyllum meeki*  
Hill, Trans. Roy. Soc., New Zealand (Geol.), **2**, no. 9,  
p. 145.  
Lower Cambrian: Silver Peak, Nevada.

1965. *Metethmophyllum meeki*

Hill, Trans-Antarctic Expedition 1955-1958, Sci. Rept. no. 10, p. 121, fig. 22.18.

Lower Cambrian: Nevada

Cotypes: 18358 (originally 15307), U. S. National Museum, Washington, D. C.

*Metethmophyllum resseri* Okulitch, 19431938. *Archaeocyathus* sp.

Resser, Geol. Soc. Am., Spec. Papers, 15, pp. 36-37, pl. 2, fig. 28.

Lower Cambrian: Shady; near Quebec; five miles southeast of Marion, Virginia.

Referred specimen: 94736, U. S. National Museum, Washington, D. C.

1943. *Metethmophyllum resseri*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 80, pl. 14, fig. 1.

Lower Cambrian: Shady; near Quebec; five miles southeast of Marion, Virginia.

Holotype: 94736, National Museum, Washington, D. C.

*MONOCYATHUS* Bedford and Bedford, 1934*Monocyathus* sp.1958. *Monocyathus* sp.

Okulitch and Greggs, Jour. Paleo., 32, p. 617.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Monocyathus* sp.

Greggs, Jour. Paleo., 33, pl. 11, fig. 1.

Lower Cambrian: about 1 mile north of Colville, Stevens County, Washington.

Referred specimen: CL11d-22, Paleontology Collection, University of British Columbia, Vancouver (and 14320, Geol. Survey Canada, Ottawa), Canada.

1960. *Monocyathus* sp.

Easton, Invertebrate Paleontology, p. 119, fig. 3.9 (6).

*NEVADACYATHUS* Okulitch, 1943*Nevadacyathus septaporus* (Okulitch)1935. *Archaeocyathus septaporus*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, 29, sec. 4,  
pp. 101-102, pl. 1, fig. 4.

Lower Cambrian: at Silver Peak, Nevada.

Holotype: 9326, Museum of Comparative Zoology, Harvard  
University, Cambridge, Massachusetts.

1939. *Archaeocyathellus (Protocyathus) septapora*

Simon, Abhandl. Senck. nat. Ges., 448, p. 19, pl. 1, fig. 12.

1943. *Nevadacyathus septaporus*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 59-60, text-  
fig. 19.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9326, Museum of Comparative Zoology, Harvard  
University, Cambridge, Massachusetts.

1955. *Nevadacyathus septaporus*

Okulitch, Treatise on Invertebrate Paleontology, pt. E,  
Archaeocyatha, p. E10, fig. 8.10.

Lower Cambrian: Nevada

1960. *Nevadacyathus septaporus*

Easton, Invertebrate Paleontology, p. 119, fig. 3.9 (4).

Lower Cambrian: U.S.A.

1962. *Nevadacyathus septaporus*

Vologdin, Osnovy paleontologii, p. 119, fig. 64.

Lower Cambrian: North America

1965. *Nevadacyathus septaporus*

Hill, Trans-Antarctic Expedition 1955-1958, Sci. Rept.  
no. 10, p. 65, text-fig. 14.14.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9326, Museum of Comparative Zoology, Harvard  
University, Cambridge, Massachusetts.

*Nevadacyathus* sp.1953. *Nevadacyathus* sp.

Shrock and Twenhofel, Principles of invertebrate paleon-  
tology, fig. 3-11A.

Lower Cambrian: Nevada

1960. *Nevadacyathus*

Clark and Stearn, The Geological Evolution of North America, fig. A-6.

*PARACOSCINUS* Bedford and Bedford, 1936*Paracoscinus* sp.1950. *Paracoscinus* sp.

Little, Geol. Surv. Canada, paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1958. *Paracoscinus* sp.

Okulitch and Greggs, Jour. Paleo., **32**, p. 618.

Cambrian: Lower part of the Laib Group, Salmo River, British Columbia, Canada.

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*Protocyathus rarum* Ford, 1878

See: *Archaeocyathellus rarus* (Ford)

*Protocyathus rarus* Ford, 1878

See: *Archaeocyathellus rarus* (Ford)

*PROTOPHARETRA* Bornemann, 1884*Protopharetra dunbari* Okulitch, 19431943. *Protopharetra dunbari*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 71-72, pl. 6, fig. 5; pl. 9, fig. 3.

Lower Cambrian: Forteau Formation of Point Amour and Taylor's Gulch, near Forteau Village, Labrador, Canada.

Cotypes: 17043, Peabody Museum, Yale University, New Haven, Connecticut, and 25642, Royal Ontario Museum, Toronto, Canada.

1953. *Protopharetra dunbari*

Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.

Lower Cambrian: Inyo County, California.

1954. *Protopharetra dunbari*

Okulitch, Jour. Paleo., **28**, p. 295.

Lower Cambrian: Inyo County, California.

Referred specimens: Museum of Paleontology, University of California, Berkeley, California.

1958. *Protopharetra dunbari*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

1959. *Protopharetra dunbari*

Greggs, Jour. Paleo., **33**, p. 69, pl. 12, figs. 4-5; pl. 14, fig. 1.

Lower Cambrian: Laib Group, south fork of Salmo River, British Columbia, Canada; and Colville, Stevens County, Washington.

Referred specimens: CL7b-8, CL11a-6, SC-6, Paleontology Collection, University of British Columbia, Vancouver (and 14316, Geological Survey of Canada, Ottawa), Canada.

1960. *Protopharetra dunbari*

Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 295.

Lower Cambrian

*Protopharetra raymondi* Okulitch, 1935

1935. *Protopharetra raymondia*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 103, pl. 2, fig. 2.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9328, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1943. *Protopharetra raymondi*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 71, pl. 4, fig. 8; pl. 6, figs. 3, 4.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9328, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1953. *Protopharetra raymondi*

Shrock and Twenhofel, Principles of invertebrate paleontology, fig. 3-11F.

Lower Cambrian: Nevada.



1960. *Protopharetra raymondi*  
Easton, Invertebrate paleontology, p. 119, fig. 3.9 (7).  
Lower Cambrian: U.S.A.
1960. *Protopharetra raymondi*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 295.  
Lower Cambrian

*Protopharetra raymondia* Okulitch, 1935

See: *Protopharetra raymondi* Okulitch, 1935

*Protopharetra rootsi* Okulitch and Roots, 1947

1947. *Protopharetra rootsi*  
Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, 41,  
app. C, p. 192.  
Lower Cambrian: Aiken Lake area, British Columbia,  
Canada.
1947. *Protopharetra rootsi*  
Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, 41,  
sec. 4, pp. 42-43, pl. 1, fig. 7.  
Lower Cambrian: Ingenika Group, Osilinka River, Aiken  
Lake area, British Columbia, Canada.  
Holotype: Collection of Geological Survey of Canada,  
Ottawa, Canada.
1958. *Protopharetra rootsi*  
Okulitch and Greggs, Jour. Paleo., 32, p. 620.  
Cambrian: upper group of the Wolverine Complex, Aiken  
Lake, Osilinka Valley, British Columbia, Canada.

*Protopharetra* sp.

1889. *Protopharetra* sp.?  
Walcott, Am. Jour. Sci., 37, p. 388.
- 1889 [1890]. *Protopharetra* sp.?  
Walcott, Proc. U. S. Nat. Mus., 12, p. 33.  
Lower Cambrian: Silver Peak, Nevada.  
Referred specimen: 15303, National Museum, Washington,  
D. C.
1890. *Protopharetra* sp.?  
Walcott, 10th Ann. Rept., Geol. Surv., p. 599, pl. 51, figs.  
1, 1a.

Lower Cambrian: Silver Peak, Nevada.

Type: 15303, National Museum, Washington, D. C.

1895. *Protopharetra* sp.

Walcott, Am. Jour. Sci., ser. 3, 49, p. 143.

Lower Cambrian: Inyo County, California.

1902. *Protopharetra* sp.

Frech, Lethaea palaeozoica, p. 683.

Cambrian: California and Nevada.

1910. *Protopharetra* sp.

Walcott, Outlines of geologic history, pp. 31, 32.

Lower Cambrian: Silver Peak, Nevada.

1912. *Protopharetra* sp.

Willis, U. S. Geol. Surv., Prof. Paper 71, pp. 100, 101.

Lower Cambrian: Olenellus zone at Silver Peak in Western Nevada.

1934. *Protopharetra* sp.

Schuchert and Dunbar, Geol. Soc. Am., Mem. 1, p. 19.

Lower Cambrian: Forteau Formation, Forteau Bay, Labrador, Canada.

1935. *Protopharetra* sp.

Okulitch, Trans. Roy. Soc. Canada, ser. 3, 29, sec. 4, p. 106, pl. 2, fig. 5.

Lower Cambrian.

1943. *Protopharetra* sp.

Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 10, 70-71, pl. 6, fig. 6.

Lower Cambrian: Silver Peak, Nevada and Forteau Formation of Point Amour and Taylor's Gulch, near Forteau Village, Labrador, Canada.

1947. *Protopharetra* sp.

Okulitch and Roots, Proc. Roy. Soc. Canada, ser. 3, 41, app. C, p. 192.

Lower Cambrian: Aiken Lake area, British Columbia, Canada.

1947. *Protopharetra* sp.

Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, 41, sec. 4, p. 43, pl. 1, fig. 8.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.

Referred specimen: 12767 in the Collection of Geological Survey of Canada, Ottawa, Canada.

1950. *Protopharetra* sp.

Little, Geol. Surv. Canada, paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1952. *Protopharetra* sp.

Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 33, pl. 9, fig. 1B.

Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.

Referred specimen: 111822, U. S. National Museum, Washington, D. C.

1953. *Protopharetra* sp.

Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.

Lower Cambrian: Inyo County, California.

1954. *Protopharetra* sp.

Okulitch, Univ. Nac. Autonoma Mexico Inst. Geol., Bull. 58, p. 62, pl. 11, fig. 1B.

Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.

Referred specimen: 111822, U. S. National Museum, Washington, D. C.

1954. *Protopharetra* sp.

Okulitch, Jour. Paleo., **28**, pp. 293, 295, 296.

Lower Cambrian: Inyo County, California.

Referred specimen: Museum of Paleontology, University of California, Berkeley, California.

1956. *Protopharetra* sp.

Okulitch, 20th Int. Geol. Congress Mexico, Geol. paleont. region Caborca, norpon. Sonora, pt. 1, p. 62, pl. 11, fig. 1B.

Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico.

Referred specimen: 111822, U. S. National Museum, Washington, D. C.

1958. *Protopharetra* sp.

Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 620.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.

Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.

1959. *Protopharetra* sp.

Greggs, Jour. Paleo., **33**, p. 69, pl. 12, figs. 1-3.

Lower Cambrian: about 1 mile north of Colville, Washington, and Salmo area, British Columbia, Canada.

Referred specimens: CL20b-3, CL8a-4 and CL4b-2. Paleontology Collection, University of British Columbia, Vancouver (and 14324 in the Geological Survey of Canada, Ottawa), Canada.

*PYCNOIDOCOSCINUS* Bedford and Bedford, 1936*Pycnoidocoscinus rectiporus* Okulitch, 19481948. *Pycnoidocoscinus rectiporus*

Okulitch, Jour. Paleo., **22**, pp. 348-349, pl. 55, figs. 2, 3.

Lower Cambrian: Donald Formation, south side of Holt Creek, Dogtooth Range, near Golden, British Columbia, Canada.

Holotype: 6 in Okulitch Collection, University of British Columbia, Vancouver, Canada.

1958. *Pycnoidocoscinus rectiporus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 619.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

*PYCNOIDOCYATHUS* Taylor, 1910*Pycnoidocyathus amourensis* (Okulitch)1943. *Cambrocyathus amourensis*

Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 76, pl. 9, fig. 3; pl. 10, fig. 3; pl. 11, figs. 1-3; pl. 18, fig. 1b.

Lower Cambrian: Forteau Formation, Point Amour and Taylor's Gulch, Labrador, Canada.

Cotypes: 17041 and 17042, Peabody Museum, Yale University, New Haven, Connecticut, and 25638, Royal Ontario Museum, Toronto, Canada.

1946. *Cambrocyathus amourensis*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **40**, sec. 4, pp. 74, 85, pl. 1, figs. A, B; pl. 2, pl. 3, pl. 6, figs. 4, 6, 7.  
Cambrian: Labrador, Canada.
1946. *Cambrocyathus amourensis*  
Okulitch, Jour. Paleo., **20**, pp. 275-276, pl. 41, figs. 1, 2.  
Lower Cambrian: Point Amour, Labrador, Canada.  
Referred specimen: 25643, Peabody Museum, Yale University, New Haven, Connecticut. Thin section 67, Royal Ontario Museum of Paleontology, Toronto, Canada.
1950. *Pycnoidocyathus amourensis*  
Okulitch, Jour. Paleo., **24**, p. 394.
1950. *Cambrocyathus amourensis*  
Little, Canada Geol. Survey, paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.
1955. *Pycnoidocyathus amourensis*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 58, pl. 2, fig. 8.  
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.  
Referred specimen: 12366, Geological Survey of Canada, Ottawa, Canada.
1957. *Pycnoidocyathus amourensis*  
Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 923-924, pl. 112, fig. 1.  
Lower Cambrian: 1 mile due NE of northeast end of Crescent Lake, lat. 60°12'30", long. 131°11'30", Wolf Lake area, Yukon, Canada.  
Referred specimen: 13341, Geological Survey of Canada, Ottawa, Canada.
1958. *Pycnoidocyathus amourensis*  
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 621.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

1959. *Pycnoidocyathus amourensis*

Greggs, Jour. Paleo., **33**, p. 70, pl. 13, figs. 9, 10.

Lower Cambrian: Colville, Stevens County, Washington; and at Salmo River at the base of Laib Group, British Columbia, Canada.

Referred specimens: CL11e-6 and CL11b-1, Paleontology Collection, University of British Columbia, Vancouver, Canada.

*Pycnoidocyathus (Archaeocyathus) profundus* (Billings)

See: *Pycnoidocyathus profundus* (Billings)

*Pycnoidocyathus (Cambrocyathus) sp.*

See: *Pycnoidocyathus sp.*

*Pycnoidocyathus ceratodictyoides* (Raymond)

1931. *Ethmophyllum ceratodictyoides*

Raymond, Bull. Mus. Comp. Zool., **55**, no. 6, pp. 176-177; pl. 2, figs. 1, 2.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9298 in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1935. *Ethmophyllum ceratodictyoides*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 100.

Lower Cambrian: Silver Peak, Nevada.

1943. *Cambrocyathus ceratodictyoides*

Okulitch, Geol. Soc. Am., Spec. Papers, **48**, pp. 74-75, pl. 9, figs. 1, 2.

Lower Cambrian: Silver Peak, Nevada.

Holotype: 9298, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts.

1950. *Pycnoidocyathus ceratodictyoides*

Okulitch, Jour. Paleo., **24**, p. 394.

1960. *Ethmophyllum ceratodictyoides*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 164.  
Lower Cambrian: North America.

*Pycnoidocyathus columbianus* (Okulitch)

1943. *Cambrocyathus columbianus*  
Okulitch, Geol. Soc. Am., Spec. Papers, 48, p. 78, pl. 12, fig. 3; pl. 13, fig. 1.  
Lower Cambrian: Canadian Rocky Mountains; Donald Formation, Dogtooth Range, Canyon Creek, near Golden, British Columbia, Canada.  
Holotype: 108104; paratype: 108105, U. S. National Museum, Washington, D. C.  
Other specimens: 9518, 9519, with Geological Survey of Canada, Ottawa, Canada.
1948. *Cambrocyathus columbianus*  
Okulitch, Jour. Paleo., **22**, p. 346, pl. 54, fig. 6.  
Lower Cambrian: Donald Formation, Canyon Creek, near Golden, British Columbia, Canada.  
Cotypes: 9518 and 9519, Geological Survey of Canada, Ottawa, Canada.
1950. *Pycnoidocyathus columbianus*  
Okulitch, Jour. Paleo., **24**, p. 394.
1950. *Cambrocyathus columbianus*  
Little, Canada Geol. Surv., paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.
1955. *Pycnoidocyathus columbianus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 58-59, pl. 2, figs. 4-6.  
Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.  
Referred specimens: 12362, 12369, in the Geological Survey of Canada, Ottawa, Canada.
1957. *Pycnoidocyathus columbianus*  
Kawase and Okulitch, Jour. Paleo., **31**, p. 924, pl. 112, fig. 2.  
Cambrian: Wolf Lake area, Yukon Territory, Canada.  
Referred specimens: AP-22 and 23, Department of Geology, University of British Columbia, Vancouver, Canada.

1958. *Pycnoidocyathus columbianus*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 619, 621, 622.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

1959. *Pycnoidocyathus columbianus*

Greggs, Jour. Paleo., **33**, pp. 69-70, pl. 12, fig. 12.

Cambrian: Colville, Stevens County, Washington.

Referred specimens: CL11a-11. Paleontology Collection, University of British Columbia, Vancouver, Canada.

*Pycnoidocyathus* cf. *columbianus* (Okulitch)1959. *Pycnoidocyathus* sp. cf. *P. columbianus*

Greggs, Jour. Paleo., **33**, pp. 69-70, pl. 13, figs. 12, 14.

Cambrian: Colville, Stevens County, Washington.

Referred specimens: CL12a-2, CL11c-7, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.

*Pycnoidocyathus dissepimentalis* (Okulitch)1943. *Cambrocyathus dissepimentalis*

Okulitch, Geol. Soc. Am., Spec. Paper 48, pp. 77-78, pl. 11, fig. 4.

Lower Cambrian: Forteau Formation, Anse au Loup, Labrador, Canada.

Holotype: 108103, U. S. National Museum, Washington, D. C.

1950. *Pycnoidocyathus dissepimentalis*

Okulitch, Jour. Paleo., **24**, p. 394.

*Pycnoidocyathus* cf. *dissepimentalis* (Okulitch)1957. *Pycnoidocyathus* cf. *P. dissepimentalis*

Kawase and Okulitch, Jour. Paleo., **31**, p. 925, pl. 112, fig. 7.



Cambrian: Wolf Lake area, Yukon Territory, Canada.  
Referred specimens: AP-23 and 24, Department of Geology,  
University of British Columbia, Vancouver, Canada.

1958. *Pycnoidocyathus* cf. *dissepimentalis*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 622.  
Lower Cambrian: Quiet Lake, Yukon Territory, Canada.

*Pycnoidocyathus donaldi* (Okulitch)

1948. *Cambrocyathus donaldi*  
Okulitch, Jour. Paleo., **22**, pp. 345-346, pl. 54, figs. 3-5.  
Lower Cambrian: Donald Formation, Holt Creek, Dog-  
tooth Mountains, British Columbia, Canada.  
Cotypes: 2 and 4, Okulitch Collection, University of British  
Columbia, Vancouver, Canada.
1950. *Pycnoidocyathus donaldi*  
Okulitch, Jour. Paleo., **24**, p. 394.
1958. *Pycnoidocyathus donaldi*  
Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 619.  
Cambrian: lower part of the Laib Group, Salmo River,  
British Columbia, Canada.  
Lower Cambrian: Donald Formation, Dogtooth Range,  
British Columbia, Canada.

*Pycnoidocyathus* cf. *donaldi* (Okulitch)

1950. *Cambrocyathus* cf. *donaldi*  
Little, Canada Geol. Surv., paper 50-19, p. 18.  
Lower Cambrian: Laib Group, Salmo area, British Colum-  
bia, Canada.
1958. *Pycnoidocyathus* cf. *donaldi*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 620.  
Lower Cambrian: Sinclair Mills, Upper Frazer River, Brit-  
ish Columbia, Canada.

*Pycnoidocyathus loupensis* (Okulitch)

1889. *Archoeocyathus profundus*  
Hinde, Quart. Jour. Geol. Soc., London, **45**, pp. 131-133,  
pl. 5, fig. 2.  
Lower Cambrian: Forteau Formation, L'Anse au Loup,  
Straits of Belle Isle, Labrador, Canada.

Type specimen: 366 in the Geological Survey of Canada, Ottawa, Canada.

1940. *Cambrocyathus loupensis*  
Okulitch, Proc. Roy. Soc. Canada, ser. 3 (abst.), **34**, p. 159.  
Cambrian: L'Anse au Loup, Labrador, Canada.
1940. *Cambrocyathus loupensis*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4,  
pp. 82-83, pl. 1, fig. 4.  
Lower Cambrian: L'Anse au Loup, Labrador, Canada.  
Holotype: 366, Geological Survey of Canada, Ottawa,  
Canada.
1943. *Cambrocyathus loupensis*  
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 74, pl. 8, fig. 6.  
Lower Cambrian: L'Anse au Loup, Labrador, Canada.  
Holotype: 366, Geological Survey of Canada, Ottawa,  
Canada.
1950. *Pycnoidocyathus loupensis*  
Okulitch, Jour. Paleo., **24**, p. 394.

*Pycnoidocyathus occidentalis* (Okulitch)

1943. *Cambrocyathus occidentalis*  
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 75-76, pl. 10,  
figs. 1, 2.  
Lower Cambrian: Silver Peak, Nevada.  
Holotype: 9358, Museum of Comparative Zoology, Harvard  
University, Cambridge, Massachusetts.
1950. *Pycnoidocyathus occidentalis*  
Okulitch, Jour. Paleo., **24**, p. 394.
1952. *Pycnoidocyathus occidentalis*  
Moore *et al.*, Invertebrate fossils, fig. 3-11(4).  
Lower Cambrian: Nevada.
1958. *Pycnoidocyathus occidentalis*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 621.  
Lower Cambrian: Wolf Lake, Yukon Territory, Canada.
1960. *Cambrocyathus occidentalis*  
Easton, Invertebrate fossils, p. 119, fig. 3.9(9).  
Lower Cambrian: U.S.A.

*Pycnoidocyathus* cf. *occidentalis* (Okulitch)1952. *Cambrocyathus* cf. *C. occidentalis*

Okulitch, Smithsonian Misc. Coll., **119**, no. 1, p. 33, pl. 9, fig. 3.

Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico. Referred specimen: 111821, U. S. National Museum, Washington, D. C.

1954. *Cambrocyathus* cf. *C. occidentalis*

Okulitch, Univ. Nac. Autonoma Mexico Bull. no. 58, p. 63, pl. 11, fig. 3.

Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico. Referred specimen: 111821, U. S. National Museum, Washington, D. C.

1956. *Cambrocyathus* cf. *C. occidentalis*

Okulitch, 20th Int. Geol. Congress, Mexico geol. paleont. region Caborca norpon. Sonora, pt. 1, p. 63, pl. 11, fig. 3.

Lower Cambrian: upper part of Buelna Formation, Difuntos Hills, 14 miles northwest of Caborca, Sonora, Mexico. Referred specimen: 111821, U. S. National Museum, Washington, D. C.

1957. *Pycnoidocyathus* cf. *P. occidentalis*

Kawase and Okulitch, Jour. Paleo., **31**, pp. 924-925, pl. 112, figs. 3-6.

Lower Cambrian: (Lord's Group B sediments), Wolf Lake area, Yukon, Canada.

Referred specimens: 13342-13345, Geological Survey of Canada, Ottawa, Canada.

*Pycnoidocyathus orthoconicus* (Okulitch)1943. *Cambrocyathus orthoconicus*

Okulitch, Geol. Soc. Am., Spec. Papers, **48**, p. 77, pl. 12, figs. 1, 2.

Lower Cambrian: Forteau Formation, Anse au Loup, Labrador, Canada.

Holotype: 108102, U. S. National Museum, Washington, D. C.

*Pycnoidocyathus profundus* (Billings)1865. *Archeocyathus profundus*

Billings, Palaeozoic Fossils, Geol. Surv. Canada, 1, pp. 3-5, 59, 354, 356, 419, text figs. 1-4.

Lower Cambrian: (Forteau Formation), [Potsdam of Billings], L'Anse au Loup, Straits of Belle Isle, Labrador, Canada. Also Potsdam Group in Vermont.

Types: 341, a; in the Geological Survey of Canada, Ottawa, Canada.

1877. *Archeocyathus profundus*

Miller, The American palaeozoic fossils, p. 42.

Cambrian: Potsdam Group of Miller.

1880. *Archaeocyathus profundus*

Roemer, Lethaea palaeozoica I, Theil, pp. 299-300.

Cambrian: "Potsdam group," Anse au Loup, Belle Isle, Newfoundland, Labrador, Canada.

1884. *Archaeocyathus profundus*

Bornemann, Z. dtsh. Geol. Ges., 36, p. 702.

1886. *Ethmophyllum profundum*

Walcott, U. S. Geol. Surv. Bull. no. 30, pp. 50-51, 78, 79, 83, 84, 85, pl. 1, figs. 1a-c; pl. 2, figs. 3, 3a, b; pl. 4, fig. 3.

Middle Cambrian: L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.

1887. *Ethmophyllum profundum*

Walcott, Am. Jour. Sci., ser. 3, 34, no. 200, art. 18, pp. 145-146.

1889. *Erimophyllum profundum*

Lesley, A dictionary of the fossils of Pennsylvania, 1, p. 226, figs. 1, 1a, 1c and 1d.

1889. *Ethmophyllum profundum*

Lesley, A dictionary of the fossils of Pennsylvania, 1, p. 227, figs. 3, 3a and 3b on p. 227.

Lower Cambrian: L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.

1889. *Archaeocyathus profundus*

Walcott, Am. Jour. Sci., 37, p. 388.

1889. *Archaeocyathus profundus*  
Nicholson and Lydekker, A Manual of palaeontology, ser. 3,  
pp. 183–184, figs. 72 A, B.  
Lower Cambrian: Straits of Belle Isle, Labrador, Canada.
1889. *Archaeocyathus profundus*  
Hinde, Quart. Jour. Geol. Soc. London, **45**, pp. 126, 127,  
129–133, pl. 5, figs. 1–5.  
Cambrian: Anse au Loup, Labrador, Canada.  
Referred specimens: in Museum of McGill College, Mon-  
treal, and Geological Survey of Canada, Ottawa, Canada.
1889. *Archaeocyathus profundus*  
Hinde, Canadian Rec. Sci., **3**, no. 6, p. 373.
1889. *Ethmophyllum profundum*  
Miller, North American geology and palaeontology, pp. 159–  
160, text-figs. 105, 106.  
Cambrian: [Upper Taconic of Miller]
1890. *Archaeocyathus profundus*  
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 600, pl. 52,  
figs. 1, 1a–c; pl. 53, figs. 1, 1a–b; pl. 54, fig. 3.  
Lower Cambrian: L'Anse au Loup, Straits of Belle Isle,  
Labrador, Canada.  
Referred specimen: 15304, National Museum, Washington,  
D. C.
1890. *Ethmophyllum profundum*  
Ulrich, Ill. Geol. Surv., **8**, p. 240.
1891. *Archaeocyathus profundus*  
Walcott, U. S. Geol. Surv. Bull. no. 81, pp. 79, 319.  
Cambrian: north side of the straits of Belle Isle on the Lab-  
rador shore, at L'Anse au Loup, Canada.  
Also: Silver Peak, Nevada.
1891. *Archaeocyathus profundus*  
Bornemann, Nova Acta der Ksl. Leop.-Carol., Deutschen  
Akad. der Naturforscher, Bd. 56, no. 3, pp. 495–499.
1895. *Archaeocyathus profundus*  
James, The American naturalist, **29**, p. 980, fig. 4.  
Cambrian: North America.
1895. *Ethmophyllum profundum*  
Head, Palaeozoic sponges of North America, pp. 7, 10.

1895. *Archaeocyathus profundus*  
Dana, Manual of geology, 4th ed., p. 470, fig. 507.  
Lower Cambrian.
1910. *Archaeocyathus profundus*  
Taylor, Roy. Soc. S. Australia, Mem. 2, pp. 61, 64, 127, 135, 165.  
Cambrian: Anse au Loup, on the straits of Belle Isle, Labrador, Canada.
1920. *Archaeocyathus profundus*  
Gordon, Trans. Roy. Soc. Edinburgh, **52**, pp. 687, 707.
1921. *Ethmophyllum profundum*  
Grabau, A textbook of geology, part II, historical geology, p. 227, fig. 1010.  
Cambrian.
1924. *Archaeocyathus profundus*  
Schuchert, A textbook of geology, part II, historical geology, 2nd ed., p. 189, pl. 4, fig. 6.  
Lower Cambrian.
1931. *Archaeocyathus profundus*  
Raymond, Bull. Mus. Comp Zool., **55**, pp. 175, 177.
1933. *Archaeocyathus profundus*  
Schuchert and Dunbar, A textbook of geology, p. 135, pl. 5, fig. 15.
1934. *Archaeocyathus profundus*  
Schuchert and Dunbar, Geol. Soc. Am., Mem. 1, p. 19.  
Lower Cambrian: Forteau Formation, Forteau Bay, Labrador, Canada.
1935. *Archaeocyathus profundus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4, p. 99.  
Lower Cambrian: Labrador, Canada and Nevada.
1937. *Archaeocyathus profundus*  
Ting, Neus. Jahrb. Mineral., **78**, pp. 331, 357, 358.
1937. *Ethmophyllum profundus*  
Okulitch, Proc. Geol. Soc. Am., p. 358.
1937. *Archaeocyathus profundus*  
Vologdin, Problems of paleontology, pp. 453, 481.

Cambrian: Labrador, Canada.

1937. *Cambrocyathus profundus*  
Okulitch, Jour. Paleo., **11**, pp. 251-252.
1937. *Archaeocyathus profundus*  
Bedford and Bedford, Kyancutta Mus. Mem. no. 4, pp. 28, 33.  
Cambrian: Canada.
1939. *Archaeocyathellus profundus*  
Simon, Abhandl. Senck. nat. Ges., **448**, pp. 19, 23-24, pl. 1, fig. 11.
1939. "*Archaeocyathus profundus*"  
Bedford and Bedford, Kyancutta Mus. Mem. no. 6, pp. 71, 78, 80, pl. 52, fig. 210.  
Cambrian: Anse au Loup, Canada.
1940. *Archaeocyathus profundus*  
Vologdin, Atlas of the leading forms of the fossil fauna of the U.S.S.R., p. 52.  
Lower Cambrian: Labrador, Canada.
1940. *Cambrocyathus profundus*  
Okulitch, Proc. Roy. Soc. Canada, ser. 3, **34**, p. 159 (abstr.)
1940. *Cambrocyathus* cf. *profundus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **34**, sec. 4, pp. 78-82, pl. 2, figs. 1, 2; pl. 3, figs. 1-3.  
Lower Cambrian: Forteau Formation, L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.  
Holotype: 341 and referred specimens: 373d, 373m, Geological Survey of Canada, Ottawa, Canada.
1940. *Cambrocyathus profundus*  
Chi, Bull. Geol. Soc. China, **20**, pp. 123, 129, 130.
1943. *Cambrocyathus profundus*  
Okulitch, Geol. Soc. Am., Spec. Papers, 48, pp. 72-73, pl. 6, fig. 7; pl. 7, figs. 1, 2; pl. 8, figs. 1-5; pl. 9, fig. 3; pl. 18, a.  
Lower Cambrian: Forteau Formation, L'Anse au Loup, Straits of Belle Isle, Labrador, Canada.  
Referred specimens: 341 and 373m, Geological Survey of Canada, Ottawa, Canada, and 15304, U. S. National Museum, Washington, D. C.

1944. *Cambrocyathus profundus*  
Shimer and Shrock, Index fossils of North America, p. 57,  
pl. 17, figs. 22, 23.  
Lower Cambrian: Labrador, Canada.
1946. *Cambrocyathus profundus*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **40**, sec. 4,  
pp. 74, 85, pl. 4; pl. 7, figs. 1A, 1B, 2, 4.  
Cambrian: Labrador, Canada.
1949. *Cambrocyathus profundus*  
Dunbar, Historical geology, pl. 2, fig. 15.  
Cambrian.
1950. *Pycnoidocyathus (Archaeocyathus) profundus*  
Okulitch, Jour. Paleo., **24**, pp. 393-394.  
Types: 341, 341a, 373, 373a, d, e, f, m., Geological Survey  
of Canada, Ottawa, Canada.
1955. *Archaeocyathus profundus*  
Neaverson, Stratigraphical palaeontology, p. 158.  
Cambrian: Forteau Formation, Western Newfoundland  
Reef, Canada.
1960. *Cambrocyathus profundus*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, pp. 280-285.  
Lower Cambrian: North America.
1965. *Cambrocyathus profundus*  
Hill, Trans-Antarctic Expedition 1955-1958, Sci. Rept.  
no. 10, p. 120.  
Lower Cambrian: North America.  
Lectotype: 341, Geological Survey of Canada, Ottawa,  
Canada.

*Pycnoidocyathus septimus* (Okulitch)

1948. ?*Cambrocyathus septimus*  
Okulitch, Jour. Paleo., **22**, pp. 346-347, pl. 53, fig. 9.  
Lower Cambrian: Donald Formation, south side of Holt  
Creek, Dogtooth Range, British Columbia, Canada.  
Holotype: 10 in Okulitch Collection at the University of  
British Columbia, Vancouver, Canada.
1958. *Pycnoidocyathus septimus*  
Okulitch and Greggs, Jour. Paleo., **32**, p. 619.



Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.

*Pycnoidocyathus solidus* Kawase and Okulitch, 1957

1957. *Pycnoidocyathus solidus*

Kawase and Okulitch, Jour. Paleo., **31**, no. 5, pp. 925-926, pl. 112, figs. 8, 9.

Lower Cambrian: 3 miles S30°E from Veronica Lake near Mile Post 702, Alaska Highway, lat. 60°3', long. 130°21', Wolf Lake area, Yukon, Canada.

Holotype: 13346, Geological Survey of Canada, Ottawa, Canada.

1958. *Pycnoidocyathus solidus*

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Wolf Lake, Yukon Territory, Canada.

*Pycnoidocyathus* sp.

1947. *Cambrocyathus* sp.

Okulitch and Roots, Trans. Roy. Soc. Canada, ser. 3, **41**, sec. 4, pp. 43-44, pl. 1, fig. 9.

Lower Cambrian: Ingenika Group, Osilinka River, Aiken Lake area, British Columbia, Canada.

Referred specimens: 12768 in the Collection of Geological Survey of Canada, Ottawa, Canada.

1948. *Cambrocyathus* sp.

Okulitch, Jour. Paleo., **22**, p. 346, pl. 54, fig. 7.

Lower Cambrian: Donald Formation, Holt Creek, Dogtooth Range, British Columbia, Canada.

1950. *Cambrocyathus* sp.

Little, Canada Geol. Surv., paper 50-19, p. 18.

Lower Cambrian: Laib Group, Salmo area, British Columbia, Canada.

1953. *Pycnoidocyathus* sp.

Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.

Lower Cambrian: Inyo County, California.

1953. *Cambrocyathus* sp.

Shrock and Twenhofel, Principles of invertebrate paleontology, figs. 3-11B-E.

Lower Cambrian: Labrador, Canada.

1954. *Pycnoidocyathus* (*Cambrocyathus*) sp.  
Okulitch, Jour. Paleo., **28**, p. 294.  
Lower Cambrian: Inyo County, California.  
Referred specimen: Museum of Paleontology, University of California, Berkeley, California.
1958. *Pycnoidocyathus* sp.  
Okulitch and Greggs, Jour. Paleo., **32**, pp. 617, 618, 619, 620.  
Lower Cambrian: Old Dominion Limestone, Colville, Washington.  
Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.  
Lower Cambrian: Donald Formation, Dogtooth Range, British Columbia, Canada.  
Lower Cambrian: Sinclair Mills, Upper Frazer River, British Columbia, Canada.  
Cambrian: upper group of the Wolverine Complex, Aiken Lake, Osilinka Valley, British Columbia, Canada.
1959. *Pycnoidocyathus* sp.  
Greggs, Jour. Paleo., **33**, pp. 70-71, pl. 12, fig. 13.  
Lower Cambrian: Colville, Stevens County, Washington.  
Referred specimen: CO17b-6, Paleontology Collection, University of British Columbia, Vancouver, British Columbia, Canada.
1960. *Pycnoidocyathus*  
Clark and Stearn, The Geological Evolution of North America, fig. 15-10.

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*Robustocyathus argentus* (Okulitch)

See: *Ajacyathus argentus* (Okulitch)

*Robustocyathus weeksi* (Okulitch)

See: *Ajacyathus weeksi* Okulitch, 1943

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*Spirocyathus atlanticus* (Billings)

See: *Archaeocyathus atlanticus* Billings, 1861

*Spirocyathus* cf. *atlanticus* (Billings)

See: *Archaeocyathus* cf. *atlanticus* Billings, 1861

*Spirocyathus constrictus* Raymond, 1931

See: *Archaeocyathus constrictus* (Raymond)

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*SYRINGOCNEMA* Taylor, 1910

*Syringocnema colvillensis* Greggs, 1959

1958. *Syringocnema colvillensis*

Okulitch and Greggs, Jour. Paleo., **32**, p. 617.

Lower Cambrian: Old Dominion Limestone, Colville, Washington.

1959. *Syringocnema colvillensis*

Greggs, Jour. Paleo., **33**, pp. 72-73, pl. 13, figs. 5, 6.

Lower Cambrian: Old Dominion Formation, about 1 mile north of Colville, Stevens County, Washington.

Holotype: CL2a-1, Paleontology Collection, University of British Columbia, Vancouver; and 14317, Geological Survey of Canada, Ottawa, Canada. Other specimens: CO18b-1, Paleontology Collection, University of British Columbia, Vancouver; and 14318, Geological Survey of Canada, Ottawa, Canada.

*Syringocnema* sp.

1952. *Syringocnema?* sp.

Okulitch, Smithsonian Misc. Coll., **119**, no. 1, pp. 33-34, pl. 8, figs. 1, 2; pl. 9, figs. 6, 7.

Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico.

Referred specimens: 111817 a, b, U. S. National Museum, Washington, D. C.

1954. *Syringocnema?*

Okulitch, Univ. Nac. Autonoma, Mexico Bull. no. 58, pp. 63-64, pl. 10, figs. 1, 2; pl. 11, figs. 6, 7.

Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico.

Referred specimens: 111817, a, b, U. S. National Museum, Washington, D. C.

1956. *Syrincocnema?*

Okulitch, 20th Int. Geol. Congress, Mexico Geol. paleont-region Caborca, norpon. Sonora, pt. 1, pp. 63-64, pl. 10, figs. 1, 2; pl. 11, figs. 6, 7.

Lower Cambrian: west end of the Proveedora Hills, Sonora, Mexico.

Referred specimens: 111817 a, b, U. S. National Museum, Washington, D. C.

*SYRINGOCYATHUS* Vologdin, 1937*Syringocyathus canadensis* Okulitch, 19551955. *Syringocyathus canadensis*

Okulitch, Proc. Roy. Soc. Canada, ser. 3, **49**, sec. 4, app. C, p. 41 (abstr.).

Lower Cambrian: Atan Group, McDame area, Northern British Columbia, Canada.

1955. *Syringocyathus canadensis*

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, p. 63, pl. 2, fig. 7.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Holotype: 12356, Geological Survey of Canada, Ottawa, Canada.

1958. *Syringocyathus canadensis*

Okulitch and Greggs, Jour. Paleo., **32**, pp. 618, 621.

Cambrian: lower part of the Laib Group, Salmo River, British Columbia, Canada.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

1959. *Syringocyathus canadensis*

Greggs, Jour. Paleo., **33**, pp. 73-74.

Cambrian: south fork of Salmo River, British Columbia, Canada.

*Syringocyathus inyoensis* Okulitch, 19541953. *Syringocyathus* sp.

Okulitch, Bull. Geol. Soc. Am., **64**, p. 1521.

Lower Cambrian: Inyo County, California.

1954. *Syringocyathus inyoensis*

Okulitch, Jour. Paleo., **28**, p. 294, pl. 28, figs. 4, 5.

Lower Cambrian: Inyo County, California.

Holotype: 32961b, other specimen: 32961a, Museum of Paleontology, University of California, Berkeley, California.

*Syringocyathus* sp.1959. *Syringocyathus* sp.

Greggs, Jour. Paleo., **33**, p. 74, pl. 13, fig. 13.

Lower Cambrian: about 1 mile north of Colville, Stevens County, Washington.

Referred specimen: CL20e-2, Paleontology Collection, University of British Columbia, Vancouver (and 14322, Geological Survey of Canada, Ottawa), Canada.

Also see: *Syringocyathus inyoensis* Okulitch, 1954

*THALAMOCYATHUS* Gordon, 1920*Thalamocyathus* sp.1955. *Thalamocyathus* sp.

Okulitch, Trans. Roy. Soc. Canada, ser. 3, **49**, sec. 4, pp. 50, 51, pl. 3, fig. 2.

Lower Cambrian: Atan Group, McDame area, British Columbia, Canada.

Referred specimen: 12365, Geological Survey of Canada, Ottawa, Canada.

1958. *Thalamocyathus* sp.

Okulitch and Greggs, Jour. Paleo., **32**, p. 621.

Lower Cambrian: Atan Group, McDame Creek, British Columbia, Canada.

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*Wilbernicyathus donegani* Wilson, 1950

See: *Incertae sedis*

## INCERTAE SEDIS

### GENERA AND SPECIES OF UNCERTAIN AFFINITIES

1960. *Archaeocyathellus atreus*  
Zhuravleva, Arkheotsiaty Sibirskoi platformy, p. 147.  
Lower Cambrian: North America.
1935. *Archaeocyathid*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4,  
p. 106, pl. 2, figs. 1a-f, text-fig. 2.
1945. *Archaeocyathid*  
McKee, Carnegie Inst. Wash. Publ. no. 563, p. 88.  
Cambrian: Fossil Rapids section, Grand Canyon.
1945. *Archaeocyathid*  
Resser, Carnegie Inst. Wash. Publ. no. 563, p. 176, pl. 26,  
fig. 1.  
Cambrian: Grand Canyon, Fossil Rapids.
1935. *Archaeocyathina*  
Okulitch, Trans. Roy. Soc. Canada, ser. 3, **29**, sec. 4,  
p. 79, text-fig. 1.  
Lower Cambrian: Silver Peak, Nevada.
1917. *Archaeocyathus (Archaeocyathellus) atreus*  
Walcott, Smithsonian Misc. Coll., **67**, no. 3, p. 67, pl. 8,  
figs. 2, 2a.  
Lower Cambrian: Mount Whyte Formation; oolitic lime-  
stone about 400 feet below summit of ridge above Gog Lake,  
below Wonder Pass on Continental Divide, in British Co-  
lumbia, 19 miles southwest of Banff, Alberta, Canada.
1943. *Archaeocyathus (Archaeocyathellus) atreus*  
Okulitch, Geol. Soc. Am., Spec. Paper 48, p. 64, pl. 3, fig. 14.  
Lower Cambrian: Mount Whyte Formation, 19 miles south-  
west of Banff, Alberta, Canada.  
Holotype: 64352, U. S. National Museum, Washington,  
D. C.

1928. *Archaeocyathus atreus*  
Walcott, Smithsonian Misc. Coll., **75**, no. 5, p. 297.  
Lower Cambrian: Mount Whyte Formation. Mount Assiniboine Region, Southern Canadian Rocky Mountains, Canada.
1955. *Archaeocyathus atreus*  
Neaverson, Stratigraphical palaeontology, p. 158.  
Cambrian: Mount Whyte Beds of British Columbia, Canada.
1924. *Archaeocyathus* sp.  
Sardeson, Pan-Am. Geol., **41**, pp. 9, 10, fig. 2.  
Early Cambrian.
1937. *Archaeocyathus?* sp.  
Mertie, U. S. Geol. Surv. Bull. no. 872, p. 79.  
Middle Cambrian: north of Yukon River, near international boundary, Alaska.
1937. "*Archaeocyathus*" sp.  
Mertie, U. S. Geol. Surv. Bull. no. 872 p. 79.  
Middle Cambrian: north of Yukon River, near international boundary, Alaska.
1885. *Archeocyathus*  
Hyatt, Science, **6**, p. 386.
1912. *Atikokania irregularis*  
Walcott, Geol. Surv. Canada, App. Memoir no. 28, p. 6, pl. 2, fig. 1.  
Pre-Cambrian?: limestone of Steeprock Series, Steeprock Lake, west-northwest of Lake Superior, Ontario, Canada.  
Types: 58317, U. S. National Museum, Washington, D. C.; and 8059d, Geological Survey of Canada, Ottawa, Canada.
1912. *Atikokania lawsoni*  
Walcott, Geol. Survey Canada, App. Memoir no. 28, pp. 5-6, pl. 1, figs. 1-5; pl. 2, fig. 2.  
Pre-Cambrian?: limestone of Steeprock Series, Steeprock Lake, west-northwest of Lake Superior, Ontario, Canada.  
Types: 58313-58316, U. S. National Museum, Washington, D. C.; and 8059a-e, Geological Survey of Canada, Ottawa, Canada.

1939. *Atikokania lawsoni*  
Simon, Abhandl. Senck. nat. Ges., **448**, p. 22.
1965. *Atikokania lawsoni*  
Hill, Trans-Antarctic Expedition 1955-1958, Sci. Rept.  
no. 10, p. 141.  
?Archaean: Steeprock Series, Steeprock Lake, from west-  
northwest of Lake Superior, Canada.
1890. *Ethmophyllum*  
Walcott, 10th Ann. Rept., U. S. Geol. Surv., p. 601, pl. 53,  
fig. 3.  
Lower Cambrian: Silver Peak, Western Nevada.
1886. *Ethmophyllum whitneyi*  
Walcott, U. S. Geol. Surv. Bull. no. 30, pp. 81-84, pl. 4,  
figs. 1a, 1f and 1g.  
Middle Cambrian: Silver Peak, Western Nevada.
1890. *Ethmophyllum whitneyi*  
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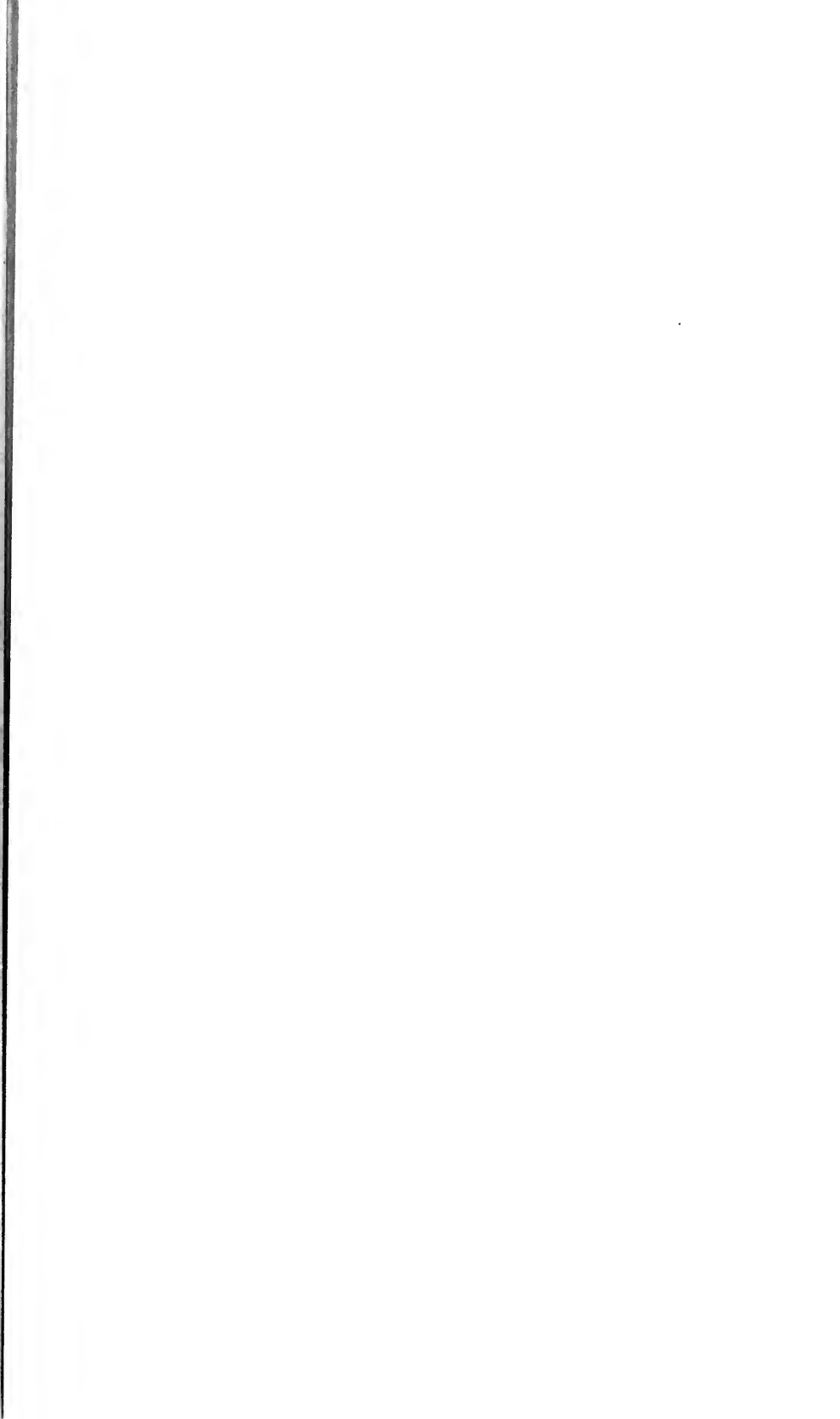


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